

# Appendix G

## OMP Factual Reports

# Sampling Event Factual Report, November 2021

PFAS OMP - RAAF Base Williamtown

15-Mar-2022

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# Sampling Event Factual Report, November 2021

PFAS OMP - RAAF Base Williamtown

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## List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
AIR	Annual Interpretive Report
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
GWE	Groundwater Elevation
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
LOR	Limit of Reporting
MW	Monitoring Well
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAQP	Sample and Analysis Quality Plan
SD	Sediment

Acronym	Term
STP	Sewage Treatment Plant
SW	Surface Water
SWL	Standing Water Level
EC	Electrical Conductivity
DO	Dissolved Oxygen
ORP	Oxidation Reduction Potential

## List of Units

Units	Term
g	Grams
L	Litres
m	Metre
mbgl	Metres below ground level
mbtoc	Metres below top of casing
mg/kg	Milligrams per kilogram
µg/L	Micrograms per Litre

## 1.0 Introduction

### 1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Program at the RAAF Base Williamtown (the 'Site') and the Williamtown Management Area in the NSW & JBT Region. The location of the Site and Management Area is shown in **Figure F1** in **Appendix A**.

The Ongoing Monitoring Plan (OMP) (AECOM, 2019) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Annual interpretative reports will be prepared following the completion of each 12-month sampling period. This sampling event factual report has been prepared to report the results of the November 2021 biannual sampling event, specifically highlighting first time detections and/or first-time exceedances of human health and ecological screening criteria for PFOS+PFHxS and/or PFOA.

This report has been prepared in accordance with the Defence (2021) *PFAS OMP Factual Report Guidance* Version 2.0 issued in May 2021 (Defence, 2021).

### 1.2 Objectives

The objectives of the Ongoing Monitoring Program are to:

- Implement the Ongoing Monitoring Plan prepared as part of the Detailed Environmental Investigations; and
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of PFAS at each property.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP).

The objective of this phase of works was to implement the scope of works for the November 2021 biannual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2021).

## 2.0 Scope of Work

The scope of works for this sampling event included:

- Obtaining access to private properties where selected groundwater, surface water and sediment sampling locations are situated;
- Gauging of groundwater levels in monitoring wells prior to collection of samples;
- Groundwater sampling and collection of water quality parameters at 102 monitoring wells and bores (see **Table 1** below and **Figure F1** in **Appendix A**). It is noted that samples from eight locations could not be collected during this sampling event, refer to **Table 10** for more details;
- Surface water sampling and collection of water quality parameters at 23 locations, see **Table 2** below and **Figure F1** in **Appendix A**. It is noted that samples from two surface water locations could not be collected during this sampling event, refer to **Table 10** for more details;
- Sediment sampling at 26 locations, see **Table 3** below and **Figure F1** in **Appendix A**. It is noted that samples from two sediment locations could not be collected during this sampling event, refer to **Table 10** for more details;
- Soil sampling at 12 locations, see **Table 4** below and **Figure F2** in **Appendix A**;
- Collecting of field duplicate samples at a rate of 1 in 10 primary samples and collecting one rinsate sample per fieldwork day;
- Analysis of samples for PFAS suite at the standard limit of reporting (LOR);
- Data management of the OMP field and laboratory data in Defence ESdat database;
- Preparation of this factual monitoring event report;

**Table 1 Groundwater Sampling Locations**

Area	Description	Sampling Location
On-Site	<b>Former &amp; Current Fire Station</b> (Facility 165)	MW196, MW198, MW202S, MW202D
	<b>Disused Fire Training Pit</b> (Facility 479)	MW166, MW167, MW168, MW169S, MW169D
	<b>Former DEMS Landfill</b> (Facility 394)	MW172, MW282S, MW280D, MW281S
	<b>Ordnance Loading Area</b>	MW244S, MW244D
	<b>Lake Cochran</b>	MW108S, MW108D, MW109D, MW175D, MW179S, MW179D, MW466, MW468
	<b>Northeast Landfill</b>	MW156D, MW209S, MW209D, MW433
	<b>Trade Waste Treatment Plant</b> (Facility 480)	MW106S, MW106D, MW208, MW212
	<b>HWC Pump Station 7</b>	MW134I, MW134D, MW814*
East of Site	<b>Pump Station 9</b> Eastern flank of PFAS plume	MW130S, MW130D, MW132S, MW132D, MW160, MW826*, MW829, MW318S, MW318D
	<b>Moors Drain</b> Eastern flank of PFAS plume	MW121, MW122*, MW162S, MW162D, MW247S, MW247D
West of Site	<b>Existing Monitoring Wells</b> West of PFAS plume	MW107S, MW107D, MW241S, MW214D, MW315S*, MW315D*
Southern Area	<b>Existing Monitoring Wells &amp; Bores</b> Southern portion of PFAS plume	MW146S, MW146A_D, MW177*, MW271S, MW271D, MW278S, MW278D



Area	Description	Sampling Location
<b>Cabbage Tree Road Area</b>	<b>Existing Monitoring Wells &amp; Bores</b> Southern portion of PFAS plume	MW124, MW125S, MW125D, MW126S, MW126D, MW139*, MW178, MW230S*, MW236S, MW236D, MW238S, MW238D
<b>Lavis Lane Area</b>	<b>Monitoring Wells</b> Southern edge of PFAS plume	MW128S, MW128D, MW163, MW279S, MW316D
<b>Salt Ash Area</b>	<b>Existing Monitoring Wells &amp; Bores</b> Eastern portion of PFAS plume	MW118, MW123, MW256S, MW256D, MW257S, MW257D, MW258S, MW258D, MW260S, MW260D, MW263S, MW263D
<b>Fullerton Cove Area</b>	<b>Existing Monitoring Wells &amp; Bores</b> Southern edge of PFAS plume	MW231D, MW231S, MW232S, MW232D, MW235S, MW235D, MW266S, MW266D, MW267S, MW267D

**Notes:**

\* Location not sampled. Refer to **Table 10** for further details.

**Table 2 Surface Water Monitoring Locations**

Area	Sampling Location
<b>Lake Cochran &amp; On-Site Drains</b>	SW047, SW048, SW108, SW110
<b>Dawsons Drain</b>	SW055, SW059, SW060
<b>Fourteen Foot Drain</b>	SW062, SW072*
<b>Ten Foot Drain</b>	SW081, SW082
<b>Moors Drain</b>	SW001, SW005, SW006, SW007, SW009, SW011*, SW014
<b>Fullerton Cove Ring Drain</b>	SW259
<b>Tilligerry Creek</b>	SW019, SW023, SW024, SW079

**Notes:**

\* Location not sampled. Refer to **Table 10** for further details.

**Table 3 Sediment Sampling Locations**

Area	Sampling Location
<b>Lake Cochran &amp; On-Site Drains</b>	SD108, SD110, SD047, SD048
<b>Dawsons Drain</b>	SD055, SD059, SD060
<b>Fourteen Foot Drain</b>	SD062, SD072*
<b>Ten Foot Drain</b>	SD081, SD082
<b>Moors Drain</b>	SD001, SD005, SD006, SD007, SD009, SD011*, SD014
<b>Fullerton Cove Ring Drain</b>	SD259
<b>Fullerton Cove (tidal gate outlet)</b>	SD254, SD255, SD326
<b>Tilligerry Creek</b>	SD019, SD023, SD024, SD079

**Notes:**

\* Location not sampled. Refer to **Table 10** for further details.

**Table 4 Soil Sampling Locations**

Area	Sampling Location	Number of locations
<b>Flood Areas</b>	2 per flood area	SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112

**Notes:**

Soil samples were collected from the designated flood areas outlined in the OMP (AECOM, 2019)

### 3.0 Deviations from the SAQP

The November 2021 sampling event was completed in general accordance with the SAQP (AECOM, 2021) with the exception of the deviations outlined in **Table 5** below.

**Table 5** Deviations from SAQP (AECOM, 2021)

SAQP	November 2021 Sampling Event
102 groundwater locations are identified to be sampled as part of the biannual sampling event	<p>Monitoring wells MW315D, MW315S and MW814 were not sampled due to access to the locations being flooded.</p> <p>Monitoring well MW177 was not sampled due to dense vegetation blocking the access track on Port Stephens Council Land.</p> <p>Monitoring wells MW139 and MW230S were not sampled as contact could not be made with the property owners.</p> <p>Monitoring well MW122 was not sampled as the well could not be located. The well was likely buried beneath soil or gravel observed in the area.</p> <p>Monitoring well MW826 was not sampled as the well could not be located. The well was likely buried beneath the sand observed in the area. Note that AECOM attempted to locate this well on two separate occasions using a metal detector.</p> <p>AECOM will attempt to access and sample these locations during the upcoming sampling event in May 2022.</p>
23 surface water locations are identified to be sampled as part of the biannual sampling event	<p>AECOM was unable collect a sample from proposed surface water locations SW011 (due to access to the location being flooded) and SW072 (as contact could not be made with the property owner).</p> <p>AECOM will attempt to collect a sample from the location again during the next scheduled OMP sampling event in May 2022.</p>
26 sediment locations are identified to be sampled as part of the biannual sampling event	<p>AECOM was unable collect a sample from proposed sediment locations SD011 (due to access to the locations being flooded) and from SD072 (as contact could not be made with the property owner).</p> <p>AECOM will attempt to collect a sample from the location again during the next scheduled OMP sampling event in May 2022.</p>

## 4.0 Methodology

### 4.1 Sampling Methodology

The methodology used for the biannual November 2021 sampling event was in accordance with the SAQP (AECOM, 2021) and is summarised in **Table 6** below.

**Table 6 Sampling Methodology**

Item	Details
Groundwater gauging	<p>The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.</p> <p>In addition, a targeted gauging round was completed of 30 selected monitoring wells to generate data for the groundwater elevation contours and assess groundwater flow direction. The targeted gauging round was completed on 23 November 2021.</p>
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater and surface water samples.</p> <p>Calibration records for the field equipment are presented in <b>Appendix C</b>.</p>
Sampling methodology	<p><b>Groundwater Monitoring Wells</b></p> <p>Groundwater samples were collected from all monitoring wells using no-purge methodology HydraSleeves™.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round. This was based on a review of the well construction log. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round.</p> <p><b>Residential Bores</b></p> <p>Bore water samples were collected by placing a laboratory provided sample bottle beneath the tap outlet to collect the “first flush” of water.</p> <p><b>Surface Water</b></p> <p>Surface water samples were collected from immediately below the water surface (approximately 10 centimetres [cm] below the surface water level, where depth permitted) to minimise collection of sediment, surface film or floating materials in the samples.</p> <p>At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p> <p><b>Sediment</b></p> <p>Sediment samples were collected from within the water body where possible using a trowel decontaminated between each location or gloved hand and placed directly into a new laboratory supplied container.</p> <p><b>Soil</b></p> <p>Soil samples were collected from the top 0.1 m at each location using a trowel and placing the sample directly into a new laboratory supplied container. The trowel was decontaminated between each location.</p>

Item	Details
Sample analysis	<p>The samples were submitted to the primary and secondary laboratories for analysis detailed in <b>Section 2.0</b>.</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services Pty Ltd (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>Laboratory Certificates are presented in <b>Appendix E</b>.</p>
QA/QC Samples	<p>A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained.</p> <p>To facilitate the QA/QC program the following sample types were obtained during the sampling program:</p> <ul style="list-style-type: none"> <li>• <i>Primary duplicates</i> collected at a rate of a rate of one per 10 primary samples. The relative percentage difference (RPD) should be less than 30%.</li> <li>• <i>Secondary duplicates</i> collected at a rate of one per 10 primary samples. The RPD should be less than 30%.</li> <li>• <i>Rinsate blanks</i> collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory limit of reporting (LOR).</li> </ul> <p>For this biannual November 2021 sampling event, the following QA/QC samples were collected:</p> <ul style="list-style-type: none"> <li>• 12 water duplicates (intra-lab) which exceeded the Data Quality Indicator (DQI) of one per 10 primary samples,</li> <li>• 12 water triplicates (inter-lab) which exceeded the DQI of one per 10 primary samples;</li> <li>• 4 soil/sediment duplicate (intra-lab) which exceeded the DQI of one per 10 primary samples;</li> <li>• 4 soil/sediment triplicate (inter-lab) which exceeded the DQI of one per 10 primary samples; and</li> <li>• 12 rinsate blanks which met the DQI of one per day of sampling where sampling equipment was reused between locations.</li> </ul> <p>The Analytical Data Validation is presented in <b>Appendix D</b>.</p>

## 4.2 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the data set include the following:

- PFAS National Environmental Management Plan 2.0 (NEMP), (HEPA 2020) <https://www.environment.gov.au/system/files/resources/2fadf1bc-b0b6-44cb-a192-78c522d5ec3f/files/pfas-nemp-2.pdf>
- Department of Health (DoH), 2017. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 (FSANZ 2017).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM).

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** and **Table 8** below.

**Table 7 PFAS Screening Criteria: Water**

Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP (2020) are from the Department of Health (DoH) (2017), which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the Tolerable Daily Intake (TDI) for PFOS and PFOA from Food Standards Australia New Zealand (FSANZ) [2017] and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) of the Australian Drinking Water Guidelines (ADWG, 2022) to determine drinking water values.  For PFHxS, DoH (2017) noted that ' <i>FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS. All surface water and groundwater results were compared to these criteria.</i>
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year.
	PFOA	10 µg/L	
<b>Ecological Receptors</b>			
Freshwater (99% species protection values)	PFOS	0.00023 µg/L	The values are from the PFAS NEMP (2020) which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – draft default guideline values. AECOM understands that these guidelines are currently being reviewed and will consider the appropriateness of considering any future revision.  The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.
	PFOA	19 µg/L	

Table 8 PFAS Screening Criteria: Soil

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Receptors</b>				
Soil	Commercial/ Industrial	PFOS + PFHxS	20 mg/kg	<p>The values presented in the PFAS NEMP (2020) are based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.</p> <p>The assumptions utilised in the derivation of the criteria in terms of exposure are adopted from the NEPM (2013) Health Investigation Level D. The values make several assumptions including 8 hrs spent indoors and 1 hr spent outdoors at a site such as a shop, office, factory or industrial site.</p> <p>The PFAS NEMP (2020) notes these soil guidance values should only be used to assess potential human exposure through direct soil contact, with simultaneous investigation of other factors including leaching, off-Site transport, bioaccumulation and secondary exposure. Further, the degree of conservatism in the soil criteria means that exceeding these values does not necessarily indicate an unacceptable risk to human health, provided other exposure pathways are controlled.</p> <p><i>Soil results were compared to these criteria (based on exposure scenario).</i></p>
		PFOA	50 mg/kg	
	Public Open Space	PFOS + PFHxS	1 mg/kg	
		PFOA	10 mg/kg	
	Residential with garden/ accessible soil	PFOS + PFHxS	0.01 mg/kg	
		PFOA	0.1 mg/kg	
<b>Ecological Receptors</b>				
Soil	Interim soil – ecological indirect exposure (Residential)	PFOS	0.01 mg/kg	<p>The values are presented in the PFAS NEMP (2020) which published interim guidance values for ecological receptors, for use in site investigations. The values were adopted from Canadian Federal Environmental Quality Guidelines (2017) for Commercial and Industrial use (coarse soil). The values are assumed to protect against potential impacts on freshwater life from PFOS originating from soil that may enter surface water and groundwater.</p> <p>The values are considered for interim use noting further research is required to review and amend (if necessary) these values for Australian conditions.</p> <p><i>All soil results collected from off-Site areas were compared against the Public Open Space and the Residential criteria.</i></p>
		PFOA	-	
	Interim soil ecological – direct exposure (Public Open Space)	PFOS	1 mg/kg	<p>Additional research is required to assess ecological direct exposure criteria currently proposed by Australian research and industry organisations. The PFAS NEMP (2020) recommends the human health screening values proposed for Public Open Space are adopted in the interim.</p> <p><i>All soil results collected from off-Site areas were compared to these criteria.</i></p>
		PFOA	10 mg/kg	

### 4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2021). Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report (refer to **Appendix D**).

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) requirements.



## 5.0 Field Observations and Results

### 5.1 General Field Observations

Field observations recorded during the November 2021 sampling event are summarised in **Table 9** below.

**Table 9** General Field Observations

Items	Observations
Weather Conditions	<p>The weather in general was observed to be overcast with light to heavy precipitation and cool to moderate temperature with a maximum daily temperature of 30.7°C recorded on Friday, 12 November 2021.</p> <p>176.6 mm of rainfall was recorded between 8 and 26 November 2021 at RAAF Base Williamtown (Williamtown RAAF NSW, 061078) (Bureau of Meteorology, 2021).</p>
Estate Management Works or Training Activities	No notable estate works or training activities were observed in the vicinity of the sampling locations.

### 5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the biannual November 2021 sampling event are summarised in **Table 10**, below.

**Table 10** Field Observations and Measurements

Item	Description
Fieldwork Dates	The biannual November 2021 sampling event was completed between 8 and 26 November 2021. The results are summarised in following sections.
Access and Sample Collection	All sample locations were accessible or were able to be sampled with the exception of those identified in Table 5.
Monitoring Well Network Condition	<p>The following repairs to monitoring wells was undertaken on 21 November 2021:</p> <ul style="list-style-type: none"> <li>MW245S – the damaged monument was replaced and secured.</li> </ul> <p>Additionally, eight of the wells were observed to have flooded gatics, either above or below TOC (MW231D, MW235D, MW236S, MW238S, MW266S, MW266D, MW271S and MW271D). Given that concentrations of PFAS were reported within the historical range for these locations, it is considered unlikely that these wells have been compromised, and that the results can be relied upon for the purposes of the OMP.</p>
Water Contamination Observations	<p>No visible indications of contamination were observed in groundwater and surface water during the sampling.</p> <p>Sulphurous like odours were noted at 11 groundwater locations and one surface water location. Organic, putrefied and septic like odours were noted at nine groundwater locations, while a metallic odour was noted at one groundwater location.</p>

Item	Description
Depth to Groundwater and Flow Direction	<p>Depth to groundwater ranged from 0.0 (MW107S, MW231D, MW235D, MW266S, MW266D and MW271D) and 2.362 (MW130S) metres below top of casing (mbTOC).</p> <p>Groundwater elevations in the aquifer ranged between -0.022 (MW128S and MW235S) and 8.462 (MW244D) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in <b>Table T1</b> in <b>Appendix B</b>.</p> <p>The inferred local groundwater flow direction is south and south east, which was generally consistent with previous flow directions (refer to <b>Figure F3</b> and <b>Figure F4</b> in <b>Appendix A</b>).</p>
Geochemical Parameters	<p>Groundwater and surface water geochemical parameters were measured prior to collecting groundwater samples. The parameters are presented in <b>Table T2</b> and <b>Table T3</b> in <b>Appendix B</b>, and are summarised below:</p> <p><b>Groundwater Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 0.36 mg/L (MW1006S) to 4.89 mg/L (MW167) indicating poor to well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 37 µS/cm (MW202D) to 40,466 µS/cm (MW266D) indicating fresh to saline conditions.</li> <li>• pH ranged from 4.1 (MW236S) to 7.98 (POT382) indicating moderately acidic to near neutral conditions.</li> <li>• Redox ranged from -11 mV (MW125D) to 372.9 mV (MW168) indicating oxidising to reducing conditions.</li> </ul> <p><b>Surface Water Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 0.4 mg/L (SW081) to 38.3 mg/L (SW060) indicating relatively poorly to well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 87.5 µS/cm (SW048) to 6,332 µS/cm (SW024) indicating fresh to brackish conditions.</li> <li>• pH ranged from 5.61 (SW048) to 8.02 (SW019) indicating acidic to neutral conditions.</li> <li>• Redox ranged from 168 mV (SW081) to 377.8 mV (SW048) indicating oxidising conditions.</li> </ul>
Soil and Sediment Observations	<p>Soils and sediments sampled and logged during this monitoring event comprised of sand, silt and clay materials with minor inclusions of gravels and trace shell fragments, and varying amounts of organic material (roots, leaves, grass). No anthropogenic inclusions were noted.</p> <p>No staining was observed. Organic odour was noted only at 1 location.</p> <p>Refer to in <b>Table T4</b> in <b>Appendix B</b> for a summary of soil and sediment classifications and observations.</p>

## 5.3 Summary of Analytical Results

### 5.3.1 Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary:

- PFAS compounds were reported at concentrations above the laboratory LOR in 50 of the 95 primary groundwater samples analysed.

- Concentrations of PFOS+PFHxS and/or PFOA exceeded the adopted human health criteria in 37 of the primary groundwater samples analysed.
- Concentrations of PFOS and/or PFOA exceeded the adopted ecological screening criteria in 44 of the primary groundwater samples analysed.

Deviations from the historical dataset are reported in **Table 11** and graphically on **Figure F5** in **Appendix A**.

**Table 11 Deviations from Historical Dataset: Groundwater**

Deviation Type	Monitoring wells/bores	Sum of PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		Nov 2021	Previous maximum	Nov 2021	Previous maximum	Nov 2021	Previous maximum
First time detections of PFOS+PFHxS and/or PFOA in groundwater	MW130S	0.01	<LOR	<LOR	<LOR	<LOR	<LOR
	MW130D	0.01	<LOR	<LOR	<LOR	<LOR	<LOR
	MW146S	0.01	<LOR	<LOR	<LOR	0.01	<LOR
	MW318S	0.01	<LOR	<LOR	<LOR	0.01	<LOR
	MW318D	<b>0.55</b>	<b>0.37</b>	<b>0.02</b>	<LOR	0.03	<LOR
First time exceedance of the adopted Human Health Screening Criteria	No first time exceedances of the adopted Human Health screening criteria were reported in the data set.						
First time exceedance of the adopted Ecological Screening Criteria	MW146S	0.01	<LOR	<LOR	<LOR	0.01	<LOR
	MW271S	0.02	0.03	<LOR	<LOR	0.01	<LOR
	MW318S	0.01	<LOR	<LOR	<LOR	0.01	<LOR
	MW318D	<b>0.55</b>	<b>0.37</b>	<b>0.02</b>	<LOR	0.03	<LOR
<b>Legend</b>							
<b>Bold</b>	Bold text indicates existing detection or exceedance of NEMP Human Health Screening Criteria						
<b>Blue shading</b>	Blue shading indicates sampling location with first time detection of PFOS+PFHxS, PFOS and/or PFOA						
<b>Yellow Shading</b>	Yellow shading indicates sampling location with first time exceedance of NEMP Human Health Screening criteria						
<b>Purple shading</b>	Purple shading indicates sampling location with first time exceedance of NEMP (2020) Ecological Screening Criteria						

### 5.3.2 Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T6** in **Appendix B**.

In summary, PFAS compounds were reported at concentrations above the laboratory LOR in 20 of the 21 primary surface water samples analysed. Concentrations of PFOS+PFHxS and/or PFOA exceeded the adopted human health criteria in 11 of the primary groundwater samples analysed. Concentrations of PFOS and/or PFOA exceeded the adopted ecological screening criteria in 20 of the primary surface water samples analysed.

There were no first-time detections, or first time exceedances of the adopted human health or ecological screening criteria for PFOS+PFHxS and/or PFOA, in the surface water samples analysed.

### 5.3.3 Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T7** in **Appendix B**.

In summary, PFAS compounds were reported at concentrations above the laboratory LOR in 24 of the 24 primary sediment samples analysed.

There were no first-time detections for PFOS+PFHxS and/or PFOA, in the sediment samples analysed.

#### **5.3.4 Soil Analytical Results**

The PFAS soil analytical results from this sampling event are presented in **Table T8** in **Appendix B**.

In summary, PFAS compounds were reported at concentrations above the laboratory LOR in 11 of the 12 primary soil samples analysed.

There were no first-time detections, or first-time exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA, in the soil samples analysed.

### **5.4 Historical Sampling Data**

Historical groundwater, surface water, sediment and soil sampling data are presented in **Tables T9, T10, T11** and **T12** (respectively) in **Appendix B**.

## 6.0 Summary and Next Sampling Events

### 6.1 Summary of Monitoring Event

The biannual monitoring event was completed at the Site, publicly accessible land and private properties within the Management Area between 8 November 2021 and 26 November 2021.

The findings of the biannual November 2021 sampling event and the recommended actions are summarised in **Table 12** below.

**Table 12 Summary of Sampling Event**

Item	Comment	Recommended Action
Access to sample locations	<p>The following were accessed and able to be sampled:</p> <ul style="list-style-type: none"> <li>• 95 monitoring wells and bores.</li> <li>• 21 surface water locations.</li> <li>• 24 sediment locations.</li> <li>• 12 soil locations.</li> </ul>	Nil
Inaccessible locations	<p>Groundwater sample from two monitoring wells (MW315S/D and MW814), one surface water (SW011) and one sediment (SD011) were not collected as access to the locations was flooded.</p>	AECOM will continue to monitor these sampling locations during the upcoming sampling event (May 2022).
	<p>Groundwater samples from one monitoring well (MW177) was not collected as the well was inaccessible due to dense vegetation blocking the access track on Port Stephens Council land.</p>	AECOM will contact Port Stephens Council to request the access track be cleared before the upcoming May 2022 sampling event.
	<p>Groundwater samples from two monitoring locations (MW139 and MW230S) and one surface water/sediment location (SW072/SD072) were not collected as the stakeholder could not be contacted to arrange appointment.</p>	AECOM will attempt to contact stakeholder and conduct sampling at this location during the upcoming sampling event (May 2022).

Item	Comment	Recommended Action
	<p>The following wells were not sampled as they were not located this round:</p> <ul style="list-style-type: none"> <li>• MW122</li> <li>• MW826</li> </ul> <p>MW122 was likely buried beneath soil / gravel observed in the area. This is considered a critical location east of the Base as it has recorded detects of PFAS previously.</p> <p>MW826 was noted to be buried under sand. This is considered to be a critical location east of the Base as it has recorded detects of PFAS previously. The well is known to be adjacent to Hunter Water Pumping Station infrastructure. Two attempts were made to locate the monitoring well with a metal detector however the monitoring well could not be located.</p>	<p>AECOM will attempt to locate, access and sample these locations during the upcoming May 2022 sampling event.</p> <p>AECOM will engage a surveyor to assist in locating MW122 and MW826 the monitoring wells during the upcoming May 2022 sampling event.</p>
First time detections of PFOS+PFHxS and/or PFOA	Five monitoring wells MW130S, MW130D, MW146S, MW318S and MW318D reported first time detections of PFOS+PFHxS and/or PFOA.	Locations will be sampled again during the May 2022 sampling event.
First time exceedance of Human Health Screening Criteria	No first time exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA were identified in the samples analysed.	Locations will be sampled again during the May 2022 sampling event.
First time exceedance of ecological Screening Criteria	Four monitoring wells MW146, MW271S, MW318S and MW318D reported first time exceedances of the adopted ecological screening criteria for PFOS.	Locations will be sampled again during the May 2022 sampling event.

## 6.2 Upcoming Sampling Events

The next OMP sampling events are scheduled for February 2022 (biota sampling) and May 2022 (comprehensive groundwater, surface water, sediment and soil sampling).

## 6.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled to be delivered in Q3 2022.

## 7.0 References

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- Standards Australia (AS/NZS5667.11-1998) *Water Quality – Sampling, part 11: Guidance on sampling of groundwater*.
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- US EPA, 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4 (EPA 240/B-06/001).



# Appendix A

Figures

## Appendix A Figures

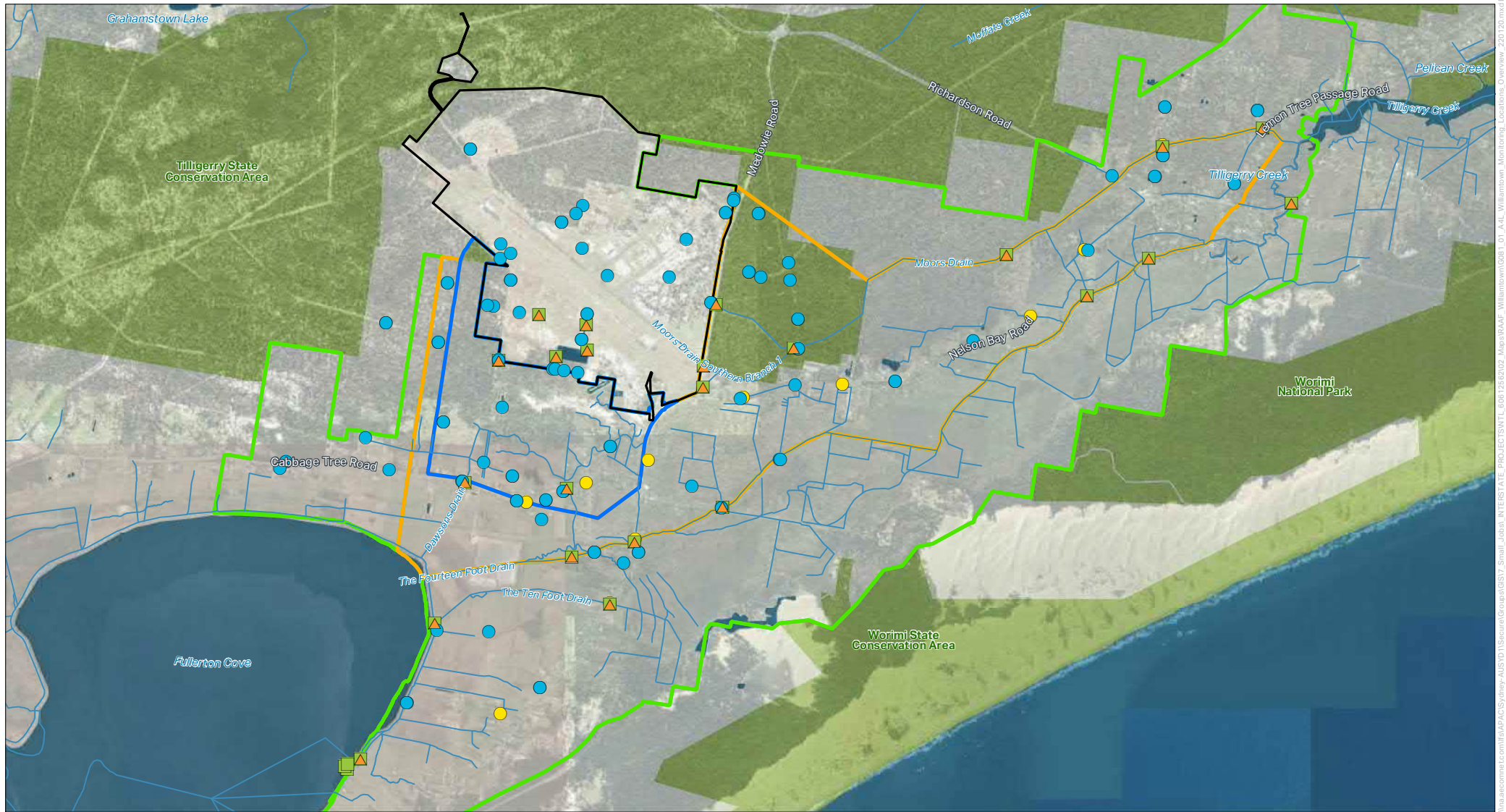
**Figure F1 Monitoring Locations Overview**

**Figure F2 Flood Sampling Areas and Soil Sample Locations**

**Figure F3 Groundwater Elevation Plan (Deep Wells)**









**Figure F4 Groundwater Elevation Plan (Shallow Wells)**

**Figure F5 Groundwater Results – Deviations from Historical Data**



**FIGURE F1 – MONITORING LOCATIONS OVERVIEW**

**Legend**

- |  |   |
|--|---|
|  RAAF Base Williamtown     |  Groundwater   |
|  Primary Management Zone   |  Sediment      |
|  Secondary Management Zone |  Soil          |
|  Broader Management Zone   |  Surface Water |



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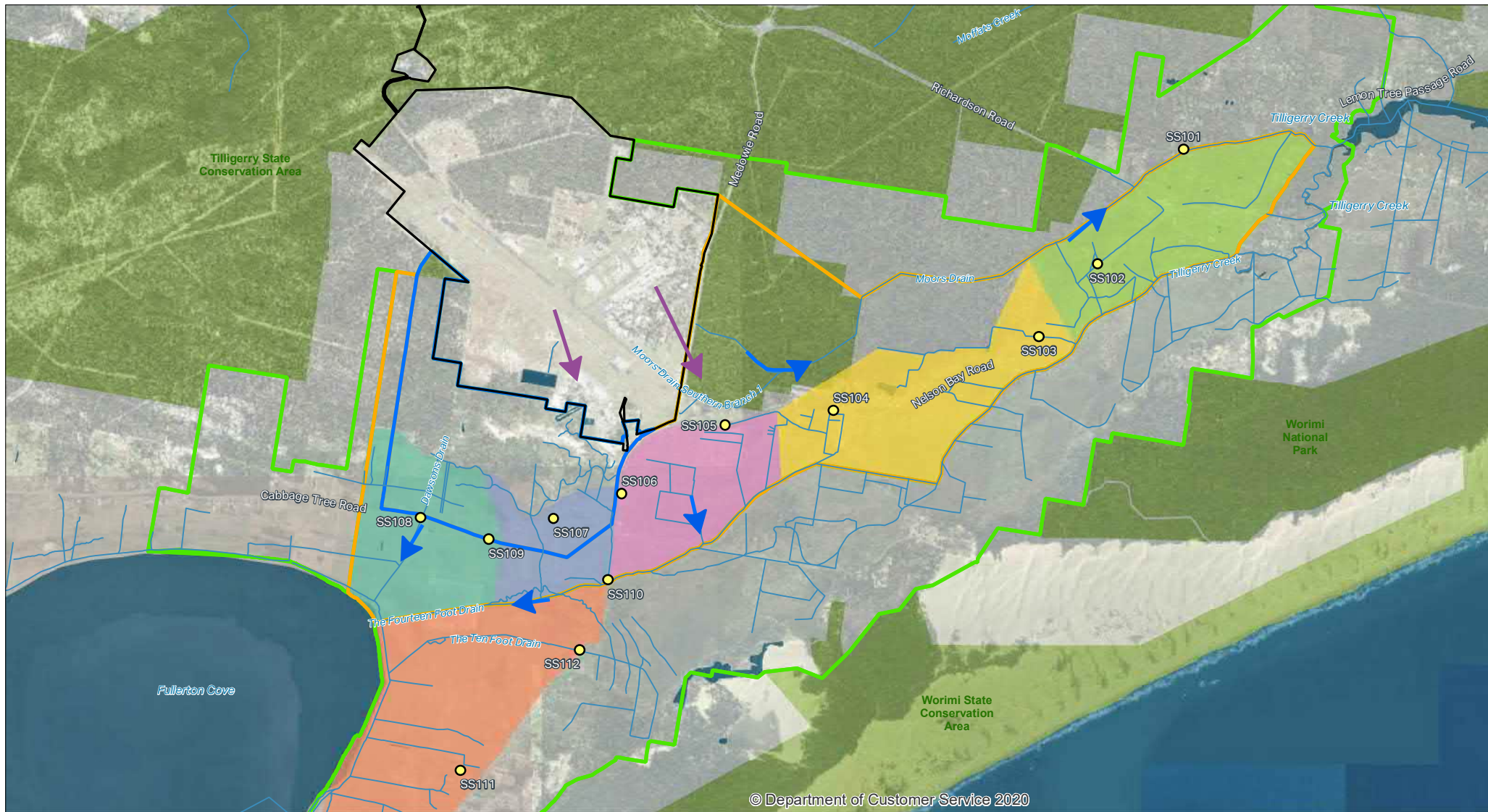
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 Client Name: Department of Defence  
 Project Number: 60612562

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**FIGURE F2 – FLOOD SAMPLING AREAS AND SOIL SAMPLE LOCATIONS**

**Legend**

□ RAAF Base Williamtown

— Drainage

➔ Interpreted groundwater flow direction

➔ Interpreted surface water flow direction

**Management Areas**

□ Primary Management Zone

□ Secondary Management Zone

□ Broader Management Zone

**Flood Sampling Area**

1

2

3

**Sample Locations**

4

5

6

● Soil



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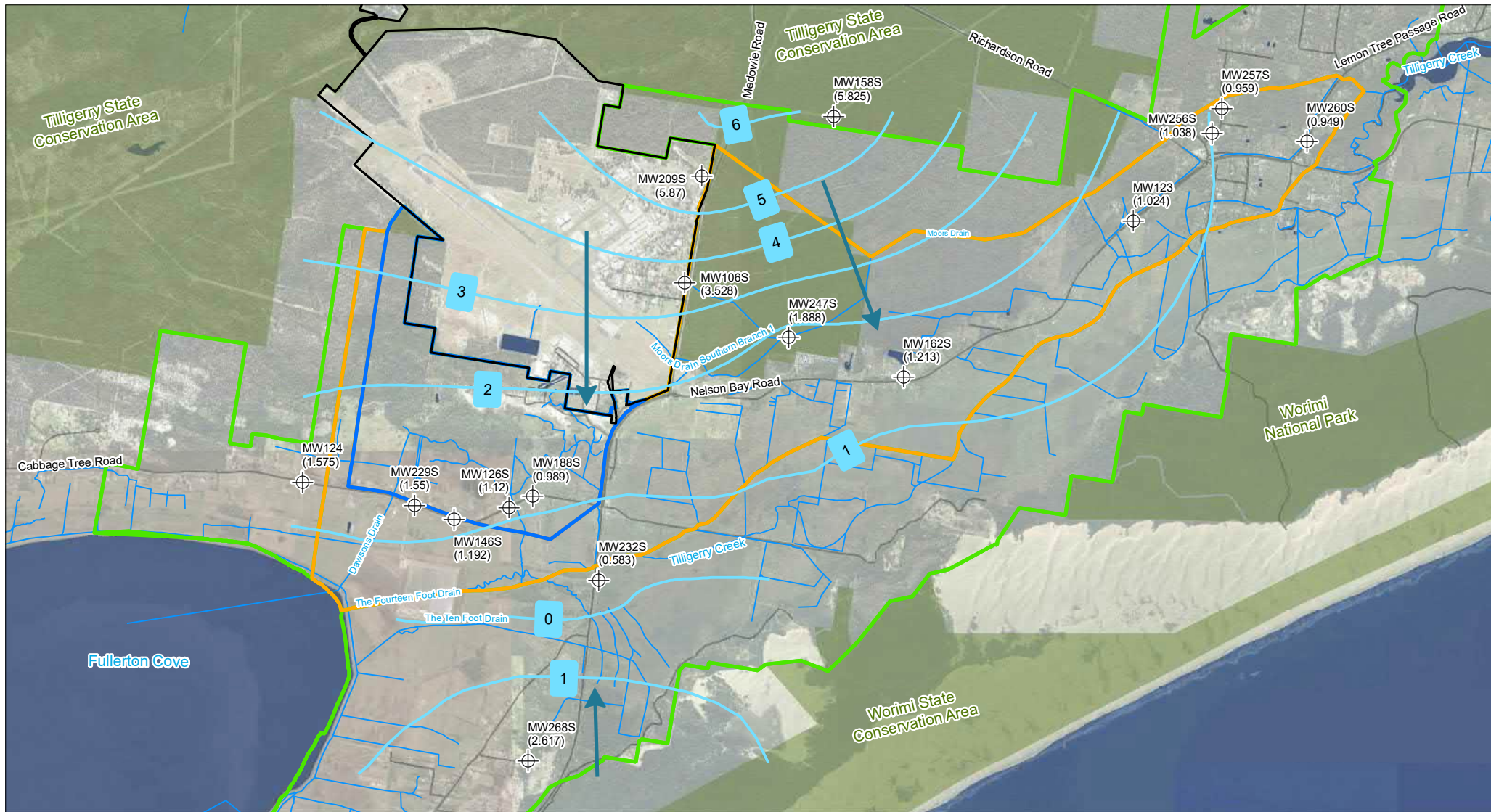
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**FIGURE F3 – GROUNDWATER ELEVATION PLAN (SHALLOW WELLS)**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone

- ⊕ Shallow Groundwater Monitoring Well
- ➔ Inferred Groundwater Flow Direction
- 0 Groundwater Elevation Contour (Shallow Wells) (mAHD)



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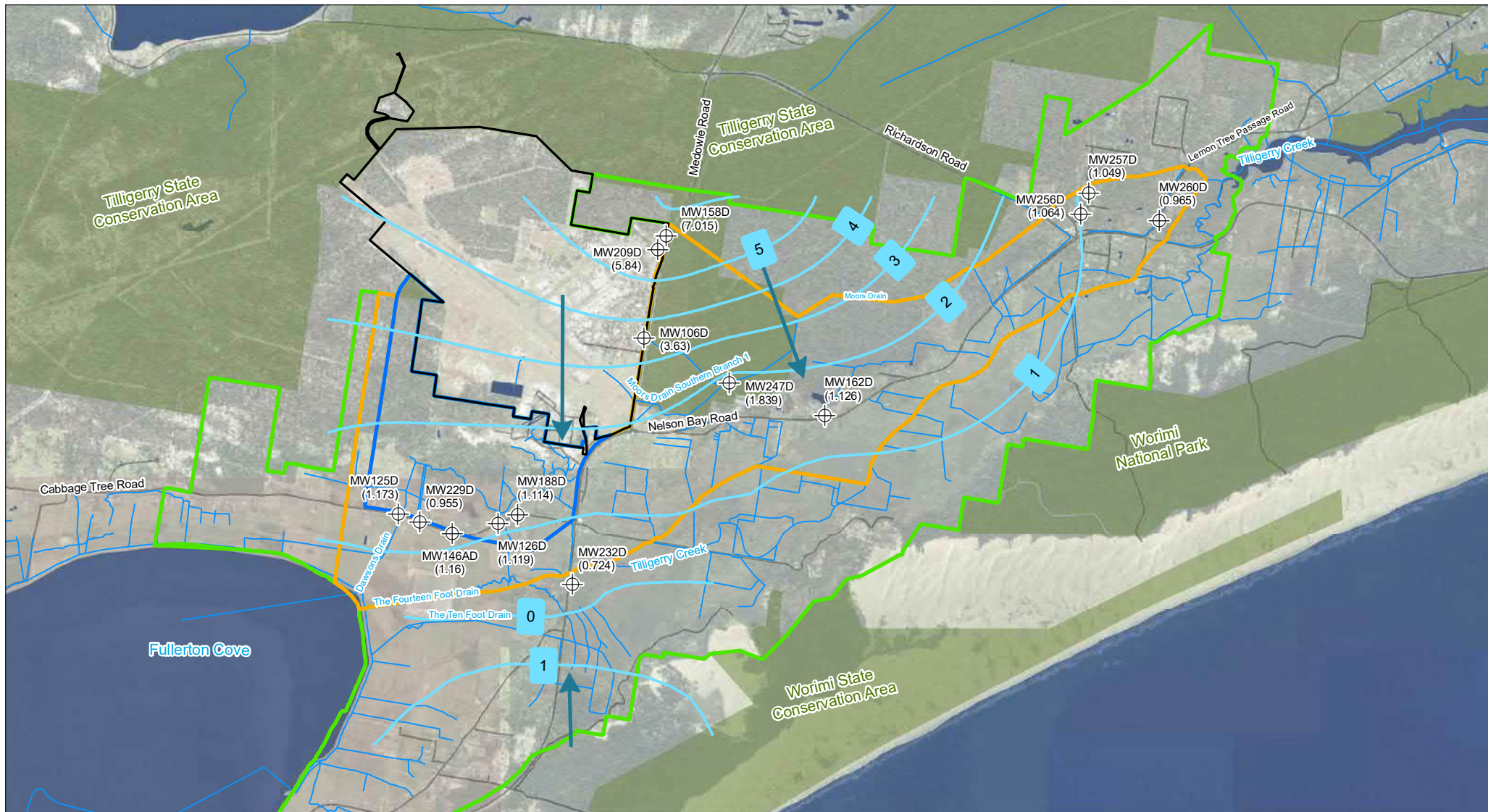
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**FIGURE F4 – GROUNDWATER ELEVATION PLAN (DEEP WELLS)**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone

- ⊕ Deep Groundwater Monitoring Well
- ➔ Inferred Groundwater Flow Direction
- Groundwater Elevation Contour (Shallow Wells) (mAHD)



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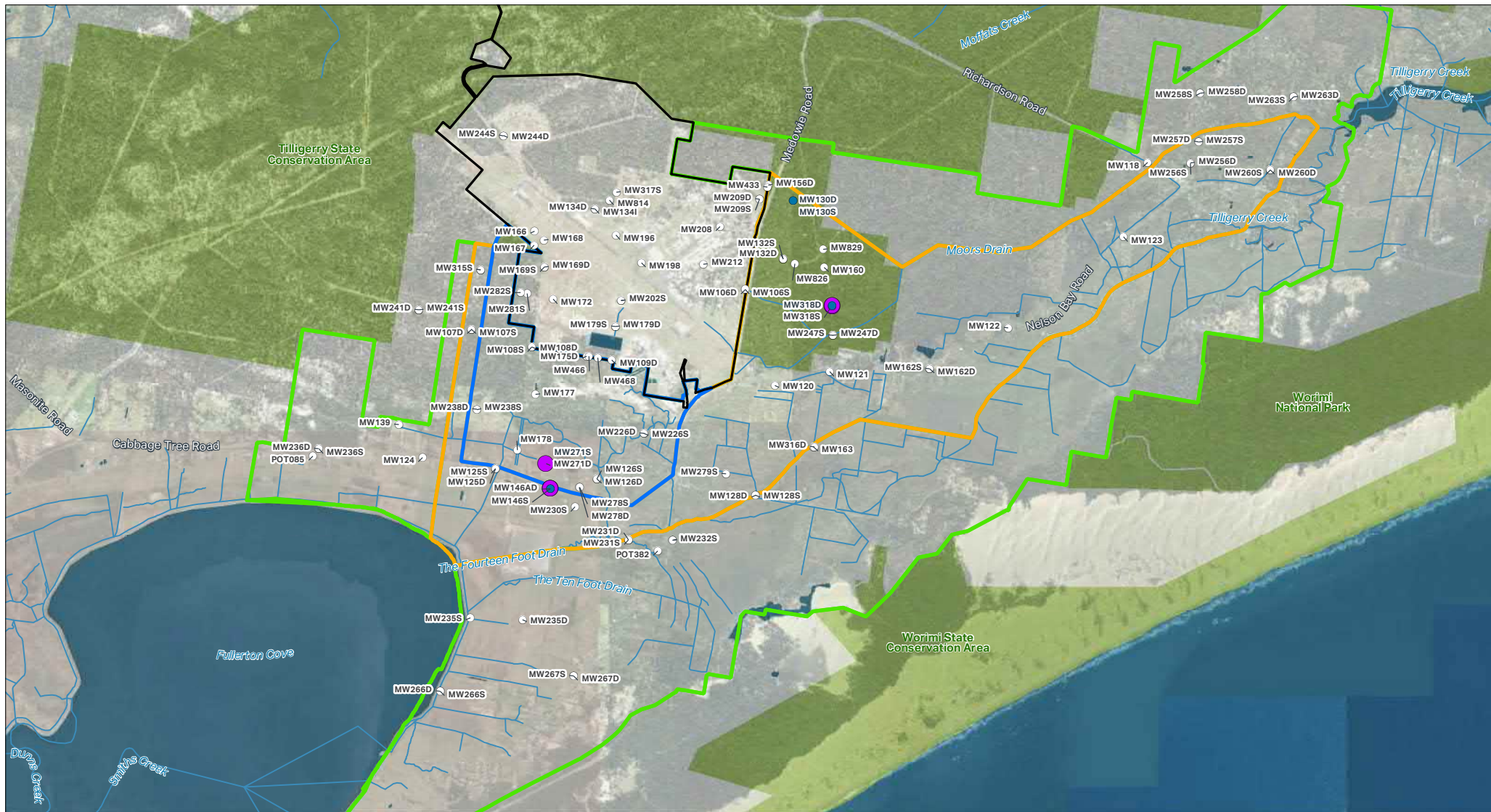
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**FIGURE F5 – GROUNDWATER RESULTS - DEVIATIONS FROM HISTORICAL DATA**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- First time detect of PFOS+PFHxS or PFOA
- First time exceedance of ecological screening criteria for PFOS
- Sampled, no new detection or exceedance



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# Appendix B

Tables



## Appendix B Tables

**Table T1 Groundwater Gauging and Field Parameter Results**

**Table T2 Groundwater Analytical Results**

**Table T3 Surface Water Analytical Results**

**Table T4 Sediment Analytical Results**

**Table T5 Soil Analytical Results**

**Table T6 Historical Groundwater Analytical Results**

**Table T7 Historical Surface Water Analytical Results**

**Table T8 Historical Sediment Analytical Results**

**Table T9 Historical Soil Analytical Results**

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Easting	Northing	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Gauging / Visit Date Time	Water Depth (mbTOC)	Water Elevation	Depth to Base of Well	Visit / Gauging Comment
MW 106D	MW 106_D			4.77	18.5	20.0	19.0	8/11/2021 12:33	1.309	3.461	19.600	Good condition.
MW 106D	MW 106_D			4.77	18.5	20.0	19.0	23/11/2021 8:37	1.140	3.630	19.570	Selected Gauging round.
MW 106S	MW 106_S			4.678	3.5	5.0	3.8	23/11/2021 8:36	1.150	3.528	4.485	Selected Gauging round.
MW 106S	MW 106_S			4.678	3.5	5.0	3.8	8/11/2021 12:14	1.314	3.364	4.490	Good condition.
MW 107D	MW 107_D			3.362	18.5	20.0	19.0	17/11/2021 9:06	0.060	3.302	20.020	Good condition.
MW 107S	MW 107_S			3.322	2.0	5.0	4.0	17/11/2021 8:56	0.000	3.322	4.840	Good condition.
MW 108D	MW 108_D			3.08	18.5	20.0	19.0	10/11/2021 12:50	0.420	2.660	19.590	Good condition.
MW 108S	MW 108_S			2.95	2.0	5.0	3.8	10/11/2021 13:02	0.330	2.620	4.320	Good condition.
MW 109D	MW 109_D			3.157	18.5	20.0	3.0	16/11/2021 11:55	0.910	2.247	3.7	Well blocked.
MW 118	-			1.674	4.5	6.0	5.0	9/11/2021 12:28	0.482	1.192	5.935	Gatic sedimented.
MW 120	-			2.03	3.5	5.0	n/a	12/11/2021 7:30	n/a	n/a	n/a	Not found, buried under road material stockpile.
MW 121	-			1.589	4.5	6.0	5.0	9/11/2021 8:39	0.385	1.204	5.970	Good condition.
MW 122	-			1.851	5.5	7.0	n/a	9/11/2021 10:15	n/a	n/a	n/a	Not found. Likely buried beneath gravel / soil.
MW 123	-			1.524	4.5	6.0	5.0	23/11/2021 12:58	0.500	1.024	5.970	Selected Gauging round.
MW 123	-			1.524	4.5	6.0	5.0	9/11/2021 13:09	0.842	0.682	5.970	Good condition.
MW 124	-			2.42	6.0	7.5	6.8	23/11/2021 9:37	0.845	1.575	7.400	Selected Gauging round.
MW 124	-			2.42	6.0	7.5	6.8	9/11/2021 15:46	1.052	1.368	7.400	Good condition.
MW 125D	MW 125_D			2.173	18.5	20.0	19.5	23/11/2021 10:01	1.000	1.173	20.250	Selected Gauging round. Gatic lid cannot be closed due to height of J-cap. Gatic flooded below TOC.
MW 125D	MW 125_D			2.173	18.5	20.0	19.5	9/11/2021 14:33	1.241	0.932	20.260	Gatic lid cannot be closed due to height of J-cap.
MW 125S	MW 125_S			2.197	6.0	7.5	6.5	9/11/2021 14:49	1.290	0.907	7.480	Gatic lid cannot be closed due to J-cap height.
MW 126D	MW 126_D			1.794	18.5	20.0	19.7	23/11/2021 11:08	0.675	1.119	20.300	Selected Gauging round.
MW 126D	MW 126_D			1.794	18.5	20.0	19.7	9/11/2021 14:37	0.960	0.834	20.340	Good condition.
MW 126S	MW 126_S			1.79	5.5	7.0	7.1	23/11/2021 11:07	0.670	1.120	6.460	Selected Gauging round.
MW 126S	MW 126_S			1.79	5.5	7.0	7.1	9/11/2021 14:33	0.946	0.844	7.250	Good condition.
MW 128D	MW 128_D			0.843	9.3	10.3	9.5	11/11/2021 13:53	0.155	0.688	10.450	Well cap missing.
MW 128S	MW 128_S			0.909	4.7	6.2	5.0	11/11/2021 10:43	0.931	-0.022	6.150	Dense / high grasses around gatic.
MW 130D	MW 130_D			5.858	15.0	16.5	15.8	15/11/2021 13:51	0.230	5.628	16.500	Good condition.
MW 130S	MW 130_S			5.794	1.0	4.0	3.0	15/11/2021 14:05	0.180	5.614	3.840	Good condition.
MW 132D	MW 132_D			6.138	15.0	16.5	15.0	15/11/2021 11:52	2.362	3.776	16.230	Good condition.
MW 132S	MW 132_S			6.082	3.0	6.0	9.0	15/11/2021 12:03	2.359	3.723	9.830	Good condition.
MW 134D	MW 134_D			8.75	18.5	20.0	19.0	18/11/2021 9:33	1.780	6.970	20.000	Good condition.
MW 134I	MW 134_I			8.71	10.0	11.5	10.5	18/11/2021 9:20	1.730	6.980	11.485	Good condition.
MW 139	-			1.986	1.0	4.0	n/a	8/11/2021 12:00	n/a	n/a	n/a	Not accessible, resident did not confirm appointment.
MW 146AD	MW 146D_A			1.62	18.5	20.0	20.0	23/11/2021 10:49	0.460	1.160	20.210	Selected Gauging round.
MW 146AD	MW 146D_A			1.62	18.5	20.0	20.0	9/11/2021 15:52	0.801	0.819	20.220	Good condition.
MW 146S	MW 146_S			1.802	0.8	3.8	3.1	23/11/2021 10:48	0.610	1.192	3.800	Selected Gauging round.
MW 146S	MW 146_S			1.802	0.8	3.8	3.1	9/11/2021 15:55	0.971	0.831	3.800	Good condition.
MW 156D	MW 156_D			7.34	19.5	21.0	20.5	8/11/2021 15:22	1.226	6.114	21.660	Good condition.
MW 158D	MW 156_D			7.34	19.5	21.0	20.5	23/11/2021 14:46	0.325	7.015	20.270	Selected Gauging round.
MW 158S	MW 158_S			6.26	1.0	4.0	3.0	23/11/2021 14:45	0.435	5.825	3.890	Selected Gauging round.
MW 160	-			4.212	1.0	4.0	3.0	15/11/2021 15:01	1.005	3.207	4.040	Good condition.
MW 162D	MW 162_D			2.876	18.6	20.1	17.8	23/11/2021 12:41	1.750	1.126	18.600	Selected Gauging round.
MW 162D	MW 162_D			2.876	18.6	20.1	17.8	12/11/2021 8:30	1.795	1.081	18.610	Likely blocked near base.
MW 162S	MW 162_S			2.838	1.5	4.5	3.2	23/11/2021 12:41	1.625	1.213	4.210	Selected Gauging round.
MW 162S	MW 162_S			2.838	1.5	4.5	3.2	12/11/2021 8:06	1.440	1.398	4.210	Good condition.
MW 163	-			1.207	0.5	3.5	3.6	11/11/2021 14:35	0.852	0.355	4.100	Good condition.
MW 166	-			7.1	0.8	3.8	3.0	18/11/2021 15:42	0.830	6.270	3.690	Good condition.
MW 167	-			7.19	0.7	3.7	3.0	18/11/2021 13:38	1.800	5.390	4.300	Good condition.
MW 168	-			6.78	0.7	3.7	2.5	18/11/2021 14:55	0.890	5.890	3.450	Good condition.
MW 169D	MW 169_D			5.8	18.0	19.5	18.3	16/11/2021 10:29	0.500	5.300	19.310	Good condition.
MW 169S	MW 169_S			5.83	0.7	3.7	3.0	16/11/2021 10:24	0.510	5.320	3.710	Good condition.
MW 172	-			4.88	0.7	3.7	2.5	10/11/2021 11:49	0.585	4.295	3.370	Good condition.
MW 175D	MW 175_D			4.11	19.5	20.0	20.0	16/11/2021 10:56	1.071	3.039	21.510	Good condition.
MW 177	-			6.458	2.6	5.6	n/a	15/11/2021 10:30	n/a	n/a	n/a	Not accessible, dense vegetation on Council track.
MW 178	-			1.76	1.2	4.2	3.0	15/11/2021 10:17	0.503	1.257	4.230	Good condition.
MW 179D	MW 179_D			4.76	18.5	20.0	18.5	16/11/2021 13:41	0.880	3.880	19.535	Good condition.
MW 179S	MW 179_S			4.71	0.8	3.8	3.0	16/11/2021 13:39	0.855	3.855	3.800	Good condition.
MW 188D	MW 188_D			1.354	18.5	20.0	19.0	23/11/2021 11:31	0.240	1.114	19.970	Selected Gauging round.
MW 188S	MW 188_S			1.439	0.8	3.8	2.8	23/11/2021 11:30	0.450	0.989	3.800	Selected Gauging round.
MW 196	-			6.76	0.8	3.8	3.2	10/11/2021 8:52	0.880	5.880	3.770	Good condition.
MW 198	-			6.11	0.8	3.8	3.7	10/11/2021 8:34	1.165	4.945	3.820	Gatic lid missing.
MW 202D	MW 202_D			5.17	19.5	21.0	19.0	10/11/2021 14:21	1.050	4.120	20.750	Good condition.
MW 202S	MW 202_S			5.21	0.8	3.8	3.2	10/11/2021 14:09	1.100	4.110	3.700	Good condition.
MW 208	-			6.99	1.2	4.2	3.2	8/11/2021 13:28	1.130	5.860	4.130	Good condition.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Easting	Northing	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Gauging / Visit Date Time	Water Depth (mbTOC)	Water Elevation	Depth to Base of Well	Visit / Gauging Comment
MW209D	MW209_D			6.53	18.0	19.5	18.5	23/11/2021 9:09	0.690	5.840	19.620	Selected Gauging round.
MW209D	MW209_D			6.53	18.0	19.5	18.5	8/11/2021 14:33	0.787	5.743	19.625	Good condition.
MW209S	MW209_S			6.47	0.6	3.6	2.5	23/11/2021 9:10	0.600	5.870		Selected Gauging round.
MW209S	MW209_S			6.47	0.6	3.6	2.5	8/11/2021 14:42	0.725	5.745	3.560	Good condition.
MW212	-			6.04	1.2	4.2	3.0	8/11/2021 13:10	1.646	4.394	4.130	Good condition.
MW226D	MW226_D			1.357	18.5	20.0	n/a	15/11/2021 9:00	n/a	n/a	n/a	Not found, vegetation cleared by contractors and attempted twice to locate.
MW226S	MW226_S			1.457	1.5	3.0	n/a	15/11/2021 9:00	n/a	n/a	n/a	Not found, vegetation cleared by contractors and attempted twice to locate.
MW229D	MW229_D			1.92	18.5	20.0	19.0	23/11/2021 10:26	0.965	0.955	20.260	Selected Gauging round.
MW229S	MW229_S			1.91	1.0	4.0	3.0	23/11/2021 10:27	0.360	1.550	4.000	Selected Gauging round.
MW230S	MW230_S			0.939	2.0	4.0	n/a	8/11/2021 12:00	n/a	n/a	n/a	Not accessible, resident did not confirm appointment.
MW231D	MW231_D			0.571	16.0	17.5	16.5	12/11/2021 11:08	0.000	0.571	17.610	Gatic flooded below TOC. SWL to TOC upon opening well cap.
MW231S	MW231_S			0.625	1.0	4.0	3.0	12/11/2021 11:03	0.140	0.485	4.010	Good condition.
MW232D	MW232_D			1.324	18.5	20.0	20.0	23/11/2021 15:16	0.600	0.724	21.045	Selected Gauging round.
MW232D	MW232_D			1.324	18.5	20.0	20.0	11/11/2021 15:49	0.660	0.664	21.030	Good condition.
MW232S	MW232_S			1.148	1.0	4.0	3.5	23/11/2021 15:17	0.565	0.583	4.600	Selected Gauging round. Sediment on IP.
MW232S	MW232_S			1.148	1.0	4.0	3.5	11/11/2021 15:41	0.640	0.508	4.600	Good condition.
MW235D	MW235_D			0.302	18.5	20.0	19.0	19/11/2021 12:01	0.000	0.302	20.110	Gatic flooded, SWL to TOC.
MW235S	MW235_S			0.238	1.0	4.0	3.0	19/11/2021 11:46	0.260	-0.022	4.010	Good condition.
MW236D	MW236_D			2.715	18.5	20.0	19.0	11/11/2021 11:20	0.910	1.805	20.250	Good condition.
MW236S	MW236_S			2.707	1.0	4.0	3.0	11/11/2021 11:28	0.915	1.792	3.945	Gatic flooded above TOC.
MW238D	MW238_D			2.211	18.5	20.0	19.5	11/11/2021 9:26	0.645	1.566	20.280	Good condition.
MW238S	MW238_S			2.27	1.0	4.0	3.0	11/11/2021 9:40	0.725	1.545	4.000	Rootlets on end of probe. Gatic flooded below TOC.
MW241D	MW241_D			5.449	18.5	20.0	19.0	15/11/2021 9:14	0.934	4.515	20.220	Good condition.
MW241S	MW241_S			5.559	1.0	4.0	2.5	15/11/2021 9:07	0.982	4.577	3.180	Good condition.
MW244D	MW244_D			9.457	18.5	20.0	20.0	10/11/2021 9:46	0.995	8.462	20.970	Good condition.
MW244S	MW244_S			9.603	1.0	4.0	4.0	10/11/2021 9:30	1.155	8.448	4.700	Good condition.
MW247D	MW247_D			2.529	18.5	20.0	19.0	23/11/2021 12:19	0.690	1.839	20.330	Selected Gauging round.
MW247D	MW247_D			2.529	18.5	20.0	19.0	12/11/2021 9:13	0.505	2.024	20.370	Good condition.
MW247S	MW247_S			2.468	1.0	4.0	3.0	23/11/2021 12:19	0.580	1.888	3.870	Selected Gauging round.
MW247S	MW247_S			2.468	1.0	4.0	3.0	12/11/2021 9:30	0.382	2.086	3.880	Good condition.
MW256D	MW256_D			1.534	18.5	20.0	18.0	23/11/2021 13:25	0.470	1.064	18.780	Selected Gauging round.
MW256D	MW256_D			1.534	18.5	20.0	18.0	9/11/2021 10:16	0.764	0.770	18.900	Good condition.
MW256S	MW256_S			1.518	1.0	4.0	3.0	23/11/2021 13:25	0.480	1.038	3.990	Selected Gauging round.
MW256S	MW256_S			1.518	1.0	4.0	3.0	9/11/2021 10:30	0.780	0.738	4.000	Good condition.
MW257D	MW257_D			1.819	18.5	20.0	19.0	23/11/2021 13:44	0.770	1.049	20.185	Selected Gauging round.
MW257D	MW257_D			1.819	18.5	20.0	19.0	9/11/2021 10:57	1.109	0.710	20.200	Good condition.
MW257S	MW257_S			1.639	1.0	4.0	3.0	23/11/2021 13:44	0.680	0.959	3.850	Selected Gauging round.
MW257S	MW257_S			1.639	1.0	4.0	3.0	9/11/2021 11:04	1.106	0.533	3.800	Good condition.
MW258D	MW258_D			2.903	18.5	20.0	19.0	9/11/2021 12:15	0.745	2.158	20.100	Good condition.
MW258S	MW258_S			2.916	1.0	4.0	3.0	9/11/2021 11:58	0.791	2.125	3.950	Good condition.
MW260D	MW260_D			2.08	18.5	20.0	19.0	23/11/2021 14:03	1.115	0.965	20.260	Selected Gauging round.
MW260D	MW260_D			2.08	18.5	20.0	19.0	12/11/2021 15:39	0.960	1.120	20.250	Good condition.
MW260S	MW260_S			2.124	1.0	4.0	3.0	23/11/2021 14:04	1.175	0.949	3.940	Selected Gauging round.
MW260S	MW260_S			2.124	1.0	4.0	3.0	12/11/2021 16:02	0.110	2.014	3.925	Good condition.
MW263D	MW263_D			1.314	18.5	20.0	19.0	9/11/2021 12:58	0.390	0.924	20.440	Good condition.
MW263S	MW263_S			1.328	1.0	4.0	3.2	9/11/2021 13:18	0.345	0.983	3.930	Good condition.
MW266D	MW266_D			0.267	18.5	20.0	19.5	19/11/2021 9:42	0.000	0.267	20.240	Gatic flooded below TOC. SWL to TOC upon opening well cap. Minor biosheen.
MW266S	MW266_S			0.229	1.0	4.0	3.0	19/11/2021 9:25	0.000	0.229	3.990	Gatic flooded below TOC. SWL to TOC upon opening well cap.
MW267D	MW267_D			1.779	16.0	17.5	16.6	19/11/2021 11:18	0.730	1.049	17.670	Gatic cap broken.
MW267S	MW267_S			1.755	1.1	4.0	2.9	19/11/2021 11:23	0.715	1.040	3.940	Gatic lid broken.
MW268S	MW268_S			3.232	2.0	5.0	4.0	23/11/2021 15:28	0.615	2.617	5.005	Selected Gauging round.
MW271D	MW271_D			1.308	18.5	20.0	19.0	12/11/2021 13:36	0.000	1.308	20.310	Gatic flooded, SWL to TOC.
MW271S	MW271_S			1.316	1.0	4.0	3.0	12/11/2021 13:22	0.003	1.313	3.995	Gatic flooded below TOC.
MW278D	MW278_D			1.289	18.5	20.0	19.0	9/11/2021 15:19	0.429	0.860		Good condition.
MW278S	MW278_S			1.253	1.5	3.0	2.3	9/11/2021 15:29	0.420	0.833	3.000	Good condition.
MW279S	MW279_S			1.295	0.8	3.8	3.2	11/11/2021 10:19	0.762	0.533	4.640	Gatic cap missing. Sediment on interface probe.
MW281S	MW281_S			5.29	1.0	4.0	3.0	10/11/2021 11:02	0.970	4.320	3.995	Gatic lid cannot be closed due to height of J-cap.
MW282S	MW282_S			5.37	1.0	4.0	3.0	10/11/2021 10:45	0.863	4.507	3.520	Good condition.
MW315D	MW320D			6.16	18.0	20.0	n/a	17/11/2021 9:30	n/a	n/a	n/a	Not accessible, pathway flooded.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Easting	Northing	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Gauging / Visit Date Time	Water Depth (mbTOC)	Water Elevation	Depth to Base of Well	Visit / Gauging Comment
MW315S	MW320S			6.18	1.0	4.0	n/a	17/11/2021 9:30	n/a	n/a	n/a	Not accessible, pathway flooded.
MW316D	MW319D			1.2	18.0	20.0	20.0	11/11/2021 14:53	0.645	0.555	21.070	Good condition.
MW317S	MW317_S			7.97	1.0	4.0	4.8	18/11/2021 8:52	0.735	7.235	4.085	Good condition.
MW318D	MW318_D			2.63	18.5	20.0	19.0	15/11/2021 12:31	0.389	2.241	20.282	Good condition.
MW318S	MW318_S			2.67	1.0	4.0	2.9	15/11/2021 12:25	0.460	2.210	3.900	Good condition.
MW433	W33			6.926	3.0	4.0	3.0	8/11/2021 15:24	0.884	6.042	3.680	Good condition.
MW466	W66			4.32	1.0	4.0	2.2	16/11/2021 11:18	1.475	2.845	3.225	Good condition. Monument incorrectly labelled MW467.
MW468	W68			4.02	1.0	4.0	3.0	16/11/2021 11:37	1.155	2.865	4.050	Good condition.
MW814	PS7_BORE 46			n/a	n/a	n/a	n/a	18/11/2021 9:00	n/a	n/a	n/a	Hunter Water Corporation pump station bore. Not found, likely flooded.
MW826	PS9_BORE 1			n/a	n/a	n/a	n/a	15/11/2021 15:30	n/a	n/a	n/a	Hunter Water Corporation pump station bore. Not found, likely burried by sand and attempted twice to locate.
MW829	PS9_BORE 30			n/a	n/a	n/a	n/a	15/11/2021 15:55	1.080	n/a	11.970	Hunter Water Corporation pump station bore.
POT085	BWS085			n/a	n/a	n/a	n/a	19/11/2021 10:39	n/a	n/a	n/a	Residential bore tap.
POT382	-			n/a	n/a	n/a	n/a	12/11/2021 10:37	n/a	n/a	n/a	Residential bore tap.

**Notes**  
 mbTOC meters below Top of Casing  
 mAHD meters Australian Height Datum  
 n/a Not applicable

Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Easting	Northing	Sampled Date Time	Sample Comment	Field Measurements					
						Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
						mg/L	°C	µS/cm	pH_Units	mV	mV
MW106D	MW106_D			8/11/2021 12:51	Clear, no turbidity, no odour, no sheen.	1.1	20.5	190.6	5.58	55.2	261
MW106S	MW106_S			8/11/2021 12:48	Light yellow, low turbidity, no odour, no sheen.	0.36	19.8	1053	6.58	16.8	222.6
MW107D	MW107_D			17/11/2021 9:15	Clear, low turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	2.43	18.7	165.9	6.1	-98	107.8
MW107S	MW107_S			17/11/2021 9:02	Light yellow, medium turbidity, no odour, no sheen. Brown suspended organic material and sediment at base of Hydrasleeve.	2.49	16.3	260.1	6.35	-83.9	121.9
MW108D	MW108_D			10/11/2021 12:54	Orange / Brown, high turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	1.63	21.8	175.2	6.21	19	224.8
MW108S	MW108_S			10/11/2021 13:08	Clear, no turbidity, no odour, no sheen. Trace organic suspended particulates.	1.26	20.3	97	4.95	-53.6	152.2
MW109D	MW109_D			16/11/2021 12:01	Light yellow, no turbidity, no odour, no sheen.	2.55	18.2	275.3	5.65	-98.6	107.2
MW118	-			9/11/2021 12:42	Light yellow, low turbidity, sulfurous odour, no sheen.	2.71	21.8	134.5	5.1	-202.6	3.2
MW121	-			9/11/2021 8:47	Light yellow, no odour, no sheen. Suspended orange particulates.	0.93	20.3	1381	7.26	-147.6	58.2
MW123	-			9/11/2021 13:18	Yellow, medium turbidity, no odour, no sheen. Trace brown suspended particulates, likely organic.	2.37	21	338.3	6.31	28.4	234.2
MW124	-			9/11/2021 15:55	Yellow / Brown, medium turbidity, no odour, no sheen. Orange suspended organic material.	1.24	21.2	83.1	5.76	-171.5	34.3
MW125D	MW125_D			9/11/2021 14:42	Light grey, low turbidity, no odour, no sheen.	1.83	21	695	6.47	-216.8	-11
MW125S	MW125_S			9/11/2021 14:59	Orange / Brown, high turbidity, no odour, no sheen. Orange suspended organic material.	1.89	20.2	460.9	6.05	-16.3	189.5
MW126D	MW126_D			9/11/2021 14:45	Clear, no turbidity, no odour, no sheen.	1.12	23	173.4	6.48	-72.9	132.9
MW126S	MW126_S			9/11/2021 14:33	Grey / Brown, no odour, no sheen.	0.8	23.9	223.3	6.61	-100.4	105.4
MW128D	MW128_D			11/11/2021 14:04	Black / Grey, low turbidity, no odour, no sheen.	1.77	18.7	1478	7.28	-187.6	18.2
MW128S	MW128_S			11/11/2021 10:50	Black / Grey, low turbidity, no odour, no sheen.	1.56	19	8836	7.28	-87.4	118.4
MW130D	MW130_D			15/11/2021 14:02	Light brown, low turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	1.66	19.8	134.5	5.29	15.3	221.1
MW130S	MW130_S			15/11/2021 14:12	Brown, medium turbidity, sulfurous odour, no sheen. Brown suspended organic material, some settling at base of Hydrasleeve.	1.43	19	203.1	5.02	-44.3	161.5
MW132D	MW132_D			15/11/2021 11:57	Clear, low turbidity, no odour, no sheen. Suspended organic material.	2.86	20.2	202.9	5.63	62	267.8
MW132S	MW132_S			15/11/2021 12:12	Light yellow, low turbidity, organic odour, no sheen. Brown organic material at base of Hydrasleeve.	1.87	18.9	137.2	5.07	65.5	271.3
MW134D	MW134_D			18/11/2021 9:41	Clear, low turbidity, no odour, no sheen. Sandy sediment at base of Hydrasleeve.	2.41	20.8	164.8	5.13	-31.4	174.4
MW134I	MW134_I			18/11/2021 9:23	Light yellow, low turbidity, sulfurous odour, no sheen. Sandy sediment at base of Hydrasleeve.	2.5	22.8	191.8	4.58	14.2	220
MW146AD	MW146D_A			9/11/2021 15:53	Light yellow, low turbidity, sulfurous odour, no sheen.	1.13	22.4	299.3	6.61	-160.3	45.5
MW146S	MW146_S			9/11/2021 15:55	Light brown, medium turbidity, no odour, no sheen.	2.2	20.5	258.2	6.44	-22.9	182.9
MW156D	MW156_D			8/11/2021 15:24	Clear, no turbidity, no odour, no sheen.	1.38	21.5	259.8	6.08	8.3	214.1
MW160	-			15/11/2021 15:02	Brown, medium turbidity, sulfurous odour, no sheen. Brown organic material at base of Hydrasleeve.	1.71	21.7	179.6	4.94	-23.3	182.5
MW162D	MW162_D			12/11/2021 8:38	Light brown, low turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	2.48	19.6	142	6.2	103.2	309
MW162S	MW162_S			12/11/2021 8:19	Light brown, low turbidity, no odour, no sheen.	2.98	19.2	82.5	6.45	121.5	327.3
MW163	-			11/11/2021 14:50	Grey, low turbidity, no odour, no sheen. Black suspended particulates.	1.97	17.1	6471	6.88	-147.4	58.4
MW166	-			18/11/2021 15:43	Light brown, medium turbidity, no odour, no sheen. Suspended particulates.	1.62	21.2	46	5.06	98.5	304.3
MW167	-			18/11/2021 13:52	Brown, medium turbidity, sulfurous odour, no sheen.	4.89	25	86.6	5.31	132.3	338.1
MW168	-			18/11/2021 15:01	Orange / Brown, high turbidity, no odour, no sheen.	1.96	20.6	53.7	5.41	167.1	372.9
MW169D	MW169_D			16/11/2021 10:33	Clear, no turbidity, no odour, no sheen.	1.89	20.6	210	6.51	-173.9	31.9
MW169S	MW169_S			16/11/2021 10:25	Light brown, medium turbidity, no odour, no sheen.	2.89	19.5	420.1	0	8.9	214.7
MW172	-			10/11/2021 11:55	Light brown, low turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	1.85	21.1	168.2	4.74	-62.9	142.9
MW175D	MW175_D			16/11/2021 11:08	Clear, no turbidity, no odour, no sheen. Trace suspended organic material and sediment.	1.35	20.5	167.7	6.75	-102.1	103.7
MW178	-			15/11/2021 10:23	Yellow, medium turbidity, no odour, no sheen. Suspended brown organic material.	1.39	19.2	546	5.7	-33.9	171.9
MW179D	MW179_D			16/11/2021 13:42	Light yellow, low turbidity, no odour, no sheen.	2.69	21.6	203.8	6.62	-49.4	156.4
MW179S	MW179_S			16/11/2021 13:46	Brown, medium turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	2.3	20.3	48.8	5.11	-47.3	158.5
MW196	-			10/11/2021 9:05	Yellow, low turbidity, no odour, no sheen. Black suspended particulates, some at base of Hydrasleeve.	2.81	19.7	69.5	5.27	-84.3	121.5
MW198	-			10/11/2021 8:44	Light yellow, low turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	1.24	20.8	220.5	5.54	130.2	336
MW202D	MW202_D			10/11/2021 14:24	Clear, low turbidity, no odour, no sheen. Black suspended particulates.	3.65	20.2	37	6.42	43	248.8
MW202S	MW202_S			10/11/2021 14:16	Light yellow, low turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve.	1.97	22.7	141.9	6.23	104.8	310.6
MW208	-			8/11/2021 13:29	Light yellow, low turbidity, no odour, no sheen.	1.35	22.9	179.8	5.84	120.2	326
MW209D	MW209_D			8/11/2021 14:46	Clear, low turbidity, no odour, no sheen.	1.25	25.3	546	6.63	-80	125.8
MW209S	MW209_S			8/11/2021 14:46	Clear, low turbidity, no odour, no sheen.	1.09	21.8	271.2	6.05	-82	123.8
MW212	-			8/11/2021 13:13	Grey / Brown, medium turbidity, no odour, no sheen.	1.41	21	190.8	6.71	133	338.8
MW231D	MW231_D			12/11/2021 11:12	Dark grey, high turbidity, sulfurous odour, no sheen. Black suspended particulates.	1.75	21.2	17084	6.73	-193.1	12.7
MW231S	MW231_S			12/11/2021 11:04	Light brown, low turbidity, no odour, no sheen. Black suspended particulates.	1.11	22.6	4529	6.99	-143.3	62.5
MW232D	MW232_D			11/11/2021 15:50	Black / Grey, medium turbidity, no odour, no sheen. Black suspended particulates.	2.38	18	16062	7.4	-141.6	64.2
MW232S	MW232_S			11/11/2021 15:41	Grey, low turbidity, no odour, no sheen. lack suspended particulates.	0.83	18	2758	7.52	-184.6	21.2
MW235D	MW235_D			19/11/2021 12:08	Grey / Brown, low turbidity, no odour, no sheen. Brown suspended particulates.	0.73	20.8	36477	7.01	-82	123.8
MW235S	MW235_S			19/11/2021 11:52	Dark brown, high turbidity, organic odour, no sheen. Black suspended particulates.	1.16	21.4	24955	6.91	-106.6	99.2
MW236D	MW236_D			11/11/2021 11:26	Light yellow, low turbidity, no odour, no sheen. Grey organic suspended particulates.	1.07	19.7	431	7.18	-213.5	-7.7
MW236S	MW236_S			11/11/2021 11:39	Grey / Brown, putrefied odour, no sheen. Brown suspended particulates.	0.84	19.4	429.7	4.1	-15.1	190.7
MW238D	MW238_D			11/11/2021 9:36	Grey, low turbidity, no odour, no sheen.	1.66	19.9	3332	7.25	82.9	288.7
MW238S	MW238_S			11/11/2021 9:49	Grey / Brown, medium turbidity, no odour, no sheen. Brown sediment at base of Hydrasleeve brown orange suspended organic material.	1.35	19.5	308	5.27	-127.5	78.3
MW241D	MW241_D			15/11/2021 9:25	Light yellow, low turbidity, no odour, no sheen. Trace sediment at base of Hydrasleeve.	1.42	17.7	209.8	6.23	-26.3	179.5
MW241S	MW241_S			15/11/2021 9:13	Clear, low turbidity, no odour, no sheen.	3.38	17.5	101.4	5.07	100.2	306
MW244D	MW244_D			10/11/2021 9:56	Clear, no turbidity, organic odour, no sheen. Brown organic material at base of Hydrasleeve.	1.02	21	246.6	6.29	-53.5	152.3
MW244S	MW244_S			10/11/2021 9:36	Clear, no turbidity, organic odour, no sheen. Brown organic material at base of Hydrasleeve.	2.61	20.9	129.5	4.16	-54.7	151.1
MW247D	MW247_D			12/11/2021 9:29	Clear, low turbidity, no odour, no sheen. Sandy sediment at base of Hydrasleeve.	0.98	20.1	185.8	6.28	77.2	283
MW247S	MW247_S			12/11/2021 9:56	Dark brown, high turbidity, no odour, no sheen. Grey sandy sediment at base of Hydrasleeve.	1.32	24.9	311.6	5.8	-111.9	93.9
MW256D	MW256_D			9/11/2021 10:17	Light yellow, low turbidity, no odour, no sheen. Suspended particulates. Dark brown sediment at base of Hydrasleeve.	1.45	22.3	130.6	6.51	-32.1	173.7
MW256S	MW256_S			9/11/2021 10:38	Light yellow, low turbidity, sulfurous odour, no sheen. Brown sediment at base of Hydrasleeve.	1.19	20.5	136.2	5.28	-54.1	151.7

Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Easting	Northing	Sampled Date Time	Sample Comment	Field Measurements					
						Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
						mg/L	°C	µS/cm	pH_Units	mV	mV
MW257D	MW257_D			9/11/2021 11:02	Black / Grey, low turbidity, no odour, no sheen.	1.6	22.4	163.5	6.5	-82.1	123.7
MW257S	MW257_S			9/11/2021 11:24	Orange / Brown, low turbidity, no odour, no sheen. Brown suspended particulates.	2.69	23.9	74.4	5.19	115.3	321.1
MW258D	MW258_D			9/11/2021 12:20	Red / Brown, no odour, no sheen.	1.45	23.6	-160.1	6.92	-158.1	47.7
MW258S	MW258_S			9/11/2021 12:00	Brown, low turbidity, no odour, no sheen.	1.13	21.4	329.4	4.86	-63.7	142.1
MW260D	MW260_D			12/11/2021 15:53	Light grey, low turbidity, no odour, no sheen. Sandy sediment at base of Hydrasleeve.	3.03	23	26037	5.6	60.2	266
MW260S	MW260_S			12/11/2021 16:10	Orange / Brown, medium turbidity, metallic odour, no sheen. Orange rust-like laminations at base of Hydrasleeve.	1.47	22.9	2371	6.76	-41.5	164.3
MW263D	MW263_D			9/11/2021 13:10	Black / Grey, no odour, no sheen.	1.55	23.4	1920	7.16	-65.7	140.1
MW263S	MW263_S			9/11/2021 13:33	Light brown, low turbidity, no odour, no sheen.	0.94	21.3	414	5.46	-61.2	144.6
MW266D	MW266_D			19/11/2021 9:45	Grey / Brown, medium turbidity, no odour, no sheen. Black suspended particulates and sediment at base of well.	1.62	21.1	40466	6.96	-52.6	153.2
MW266S	MW266_S			19/11/2021 9:30	Clear, low turbidity, no odour, no sheen. Trace black suspended particulates and sediment at base of Hydrasleeve.	1.35	20.1	35408	7.01	-158	47.8
MW267D	MW267_D			19/11/2021 11:21	Light brown, medium turbidity, no odour, no sheen. Brown sand at base of Hydrasleeve.	2.5	20.9	398.4	7.35	-39.4	166.4
MW267S	MW267_S			19/11/2021 11:27	Grey, medium turbidity, septic odour, no sheen. Brown sand at base of Hydrasleeve. Suspended white unknown material present.	1.25	20.6	532	6.47	-116.8	89
MW271D	MW271_D			12/11/2021 13:44	Brown, medium turbidity, no odour, no sheen.	1.57	22.4	218.2	6.15	-32.2	173.6
MW271S	MW271_S			12/11/2021 13:30	Light brown, low turbidity, no odour, no sheen. Black and brown suspended particulates.	1.41	23.9	437.5	5.32	-38.8	167
MW278D	MW278_D			9/11/2021 15:19	Brown, high turbidity, no odour, no sheen.	1.51	22.2	169.8	6.54	-117.4	88.4
MW278S	MW278_S			9/11/2021 15:29	Grey / Brown, no turbidity, sulfurous odour, no sheen.	1.68	19.6	210.7	6.37	-96.4	109.4
MW279S	MW279_S			11/11/2021 10:26	Black / Grey, medium turbidity, no odour, no sheen. Black suspended particulates.	2.11	18.3	867	7.08	-126.1	79.7
MW281S	MW281_S			10/11/2021 11:12	Brown, high turbidity, organic odour, no sheen. Brown suspended particulates.	2.9	20.6	269.1	4.96	-104.4	101.4
MW282S	MW282_S			10/11/2021 10:53	Light yellow, low turbidity, organic odour, no sheen. Brown organic material at base of Hydrasleeve.	1.76	19.9	380	4.91	-68.9	136.9
MW316D	MW319D			11/11/2021 14:56	Grey, medium turbidity, no odour, no sheen. Black suspended particulates. Hydrasleeve covered in black film.	2.27	18.3	25175	6.83	-145.9	59.9
MW317S	MW317_S			18/11/2021 8:56	Yellow / Brown, medium turbidity, sulfurous odour, no sheen. Brown sandy sediment at base of Hydrasleeve. Suspended organic particulates.	3.67	21.4	135.7	5.04	-3.4	202.4
MW318D	MW318_D			15/11/2021 12:34	Light brown, low turbidity, no odour, no sheen.	2.34	19.9	237.2	5.96	-26.8	179
MW318S	MW318_S			15/11/2021 12:27	Brown, low turbidity, organic odour, no sheen. Suspended organic material.	2.06	20.6	231	5.23	-19.4	186.4
MW433	W33			8/11/2021 15:24	Clear, low turbidity, no odour, no sheen.	1.87	20.4	136.3	5.9	-141.7	64.1
MW466	W66			16/11/2021 11:27	Light yellow, low turbidity, no odour, no sheen.	2.39	20.7	120.2	5.83	-78.8	127
MW468	W68			16/11/2021 11:42	Yellow, low turbidity, no odour, no sheen.	1.52	19.2	136.2	5.45	-33.6	172.2
MW829	PS9_BORE_30			15/11/2021 15:55	Clear, no turbidity, no odour, no sheen.	2.24	22.9	177.7	5.73	94.2	300
POT085	BWS085			19/11/2021 10:56	Clear, low turbidity, sulfurous odour, no sheen.	1.54	20.7	877	6.53	-80	125.8
POT382	-			12/11/2021 10:39	Clear, no turbidity, no odour, no sheen.	0.58	26.7	2163	7.98	-95.3	110.5

**Notes**  
 mV millivolts  
 mg/L milligrams per Litre  
 °C degrees Celsius  
 µS/cm microSiemens per centremetre  
 Corrected field Redox measurement Eh = Er + 205.8  
 - Not measured  
 n/a Not applicable

Table T3 - Surface Water Geochemical Parameters and Observations

Location Code	Alternative Name	Easting	Northing	Sampled Date Time	Location Comments	Sample Comment	Field Measurements					
							Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
SW001	MD1			19/11/2021 14:49	Drainage channel. Weeds and grasses in drain. Waterbody width (approx.): 2.0 m, banks up to 4.0 m. Waterbody depth (approx.): 1.0 m. Water flow observed.	Clear, low turbidity, no odour, no sheen.	4.83	22.5	162	6.19	95.5	301.3
SW005	MD5			17/11/2021 14:53	Drainage channel with concrete outlet. Grasses and trees along banks. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.2 m. Water flow observed.	Yellow, low turbidity, no odour, no sheen.	4.3	21.1	457.8	6.31	89.4	295.2
SW006	MD6			17/11/2021 13:27	Drainage channel. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.0 m.	Yellow, low turbidity, no odour, no sheen.	5.49	23.8	183.1	7.93	80.1	285.9
SW007	MD7			16/11/2021 15:40	Drainage channel. Grasses in drain and bushes along banks. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. No water flow observed.	Clear, low turbidity, no odour, no sheen.	3.85	21.8	133.2	6.81	109.6	315.4
SW009	MD8			17/11/2021 13:43	Drainage channel. Aquatic vegetation present. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.5 m.	Clear, no turbidity, no odour, no sheen.	3.49	26.7	180	6.21	106	311.8
SW011	MD10			n/a	Not accessible, pathway flooded.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW014	MD14			17/11/2021 14:24	Drainage channel with concrete outlet. Trees along banks; aquatic vegetation and suspended organic material present. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.5 to 1.0 m. Water flow observed.	Clear, low turbidity, no odour, no sheen.	4.74	23.1	170.8	6.21	79.4	285.2
SW019	TC12			12/11/2021 12:16	Creek. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 2.0 m. Water flow observed.	Light brown, medium turbidity, no odour, no sheen.	4.27	25.8	744	8.02	9	214.8
SW023	TC6A			17/11/2021 15:49	Creek / Drainage channel. Grass and trees along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.4 m. Water flow observed.	Brown, low turbidity, no odour, no sheen.	3.91	23.7	799	7.17	43.6	249.4
SW024	TC7			17/11/2021 15:18	Creek / Drainage channel with concrete outlets. Trees and reeds on one side of bank and grass on the other. Waterbody width (approx.): 8.0 to 9.0 m. Waterbody depth (approx.): 1.0 to 2.0 m. Water flow observed. Some brown suspended organic material. Sample taken near autosampler.	Brown, high turbidity, sulfurous odour, no sheen.	4.07	23.2	6332	6.85	95.7	301.5
SW047	BD03			16/11/2021 13:20	Drainage channel. Dense vegetation along banks; aquatic plants and suspended algal growth present. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 2.0 m. Water flow observed.	Yellow, low turbidity, no odour, no sheen.	3.59	20.4	132	5.97	93.5	299.3
SW048	BD04			16/11/2021 13:01	Drainage channel. Reeds and grasses in drain. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.3 m. No water flow observed.	Light brown, low turbidity, no odour, no sheen.	6.85	25.1	87.5	5.61	172	377.8
SW055	DD1			16/11/2021 12:34	Concrete drainage channel. Waterbody width (approx.): 3.5 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	Yellow, no turbidity, no odour, no sheen.	4.98	18.7	89.2	6.18	62	267.8
SW059	DD2			15/11/2021 11:47	Drainage channel. Vegetation along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): >1.0 m.	Yellow, low turbidity, no odour, no sheen.	2.69	18.8	151.5	6.11	137	342.8
SW060	DD3			15/11/2021 12:24	Drainage channel. Vegetation along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): >1.0 m.	Light brown, low turbidity, no odour, biosheen.	38.3	20.3	164.7	6.09	120.4	326.2
SW062	DD5			17/11/2021 12:05	Concrete drainage channel. Waterbody width (approx.): 6.0 m. Waterbody depth (approx.): 0.6 m.	Light brown, medium turbidity, no odour, biosheen.	2.67	23.7	857	7.06	47.6	253.4
SW072	FFD4			n/a	Not accessible, unable to secure appointment with property owner.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW079	TC2			12/11/2021 15:00	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.5 m.	Yellow, low turbidity, no odour, no sheen.	2.91	24.7	796	6.64	73.5	279.3
SW081	TFD1			30/11/2021 16:30	Drainage channel with concrete outlet. Reeds in water and along banks; algal growth and biosheen on water surface. Waterbody width (approx.): 1.0 to 3.0 m at different points. Waterbody depth (approx.): 0.5 to 1.0 m.	Brown, high turbidity, no odour, biosheen.	0.4	18.7	742	6.69	-37.8	168
SW082	TFD2			19/11/2021 12:23	Drainage channel in front of concrete outlets. Grass along banks. Waterbody width (approx.): 8.0 m. Waterbody depth (approx.): > 2.0 m. Water flow observed.	Yellow, low turbidity, no odour, no sheen.	3.49	23.5	1272	7.13	39.7	245.5
SW108	LC			16/11/2021 14:06	Lake Cochran. Vegetation along banks. Waterbody width (approx.): 250 x 150 m. Waterbody depth (approx.): >2 m. No water flow observed.	Yellow, low turbidity, no odour, no sheen.	4.88	24.6	100.2	6.63	34.5	240.3
SW110	LC_B			16/11/2021 12:16	Lake Cochran. Vegetation along banks. Waterbody width (approx.): 250 x 150 m. Waterbody depth (approx.): >2 m. Water flow observed. Sample collected upstream of filtration system.	Yellow, low turbidity, no odour, no sheen.	6.04	21.2	92.1	6.67	33.6	239.4
SW259	FCD4			26/11/2021 8:15	Drainage channel. Waterbody width (approx.): 3.0 to 4.0 m. Waterbody depth (approx.): 2.0 m.	Yellow, low turbidity, no odour, no sheen.	2.52	20.6	1869	7.05	126	331.8

**Notes**  
 mV milliVolts  
 mg/L milligrams per Litre  
 °C degrees Celsius  
 µS/cm microSiemens per centremetre  
 Corrected field Redox measurement Eh = Er + 205.8  
 - Not measured  
 n/a Not applicable

Table T4 - Sediment and Surface Soil Observations

Location Code	Alternative Name	Easting	Northing	Sampled Date Time	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD001	MD1			19/11/2021 14:30	0.1	0.2	Sandy SILT: brown, medium grained sand, 20% organic material (leaves and roots). No odour or staining.
SD005	MD5			17/11/2021 14:58	0.1	0.15	Gravelly SAND: brown, fine to medium gravel, with fine to medium grained sand, 20% organic material (decomposing leaves). No odour or staining.
SD006	MD6			17/11/2021 13:26	0	0.1	Silty SAND: brown, fine to medium grained, 15% organic material (roots). No odour or staining.
SD007	MD7			16/11/2021 15:39	0.1	0.2	SAND: light brown, medium grain, 5% organic material. No odour or staining.
SD009	MD8			17/11/2021 13:42	0	0.05	SAND: light brown, fine to medium grained. No odour or staining.
SD011	MD10			n/a	n/a	n/a	Not sampled. Location not accessible, pathway flooded.
SD014	MD14			17/11/2021 14:30	0.1	0.2	Sandy SILT: black-brown, fine grained sand, 10% organic material (rootlets). No odour or staining.
SD019	TC12			12/11/2021 12:15	0.05	0.1	Sandy SILT: grey, fine grained sand, 10-15% organic material (leaves and twigs), trace shell fragments. No odour or staining.
SD023	TC6A			17/11/2021 15:51	0.05	0.1	Sandy SILT: brown, fine to medium grained sand, 5% organic material. No odour or staining.
SD024	TC7			17/11/2021 15:20	0.1	0.2	CLAY: brown-black, low to medium plasticity, trace organic material. No odour or staining.
SD047	BD03			16/11/2021 13:26	0.1	0.2	Silty SAND: brown, medium grained, 50% organic material (decomposing leave and algae). No odour or staining.
SD048	BD04			16/11/2021 13:06	0.1	0.15	Sandy SILT: brown, medium grained sand, 10% organic material. No odour or staining.
SD055	DD1			16/11/2021 12:44	0.05	0.1	Silty SAND: light brown, fine grained sand, 20% organic material. No odour or staining.
SD059	DD2			15/11/2021 11:50	0.05	0.1	SAND: brown, 10% organic material. No odour or staining.
SD060	DD3			15/11/2021 12:30	0.05	0.1	Sandy SILT: dark brown/black, trace organic material. No odour or staining.
SD062	DD5			17/11/2021 12:08	0.05	0.1	Sandy CLAY: brown-grey, fine to medium grained sand, low plasticity. No odour or staining.
SD072	FFD4			n/a	n/a	n/a	Not sampled. Location not accessible, unable to secure appointment with property owner.
SD079	TC2			12/11/2021 15:05	0.1	0.15	Sandy SILT: black, fine to medium grained sand, 10-15% organic material. No odour or staining.
SD081	TFD1			17/11/2021 10:42	0.1	0.2	Sandy CLAY: brown, fine grained sand, low plasticity, trace fine gravels, 10% organic material. No odour or staining.
SD082	TFD2			19/11/2021 12:25	0.1	0.15	CLAY: brown, low plasticity. No odour or staining.
SD108	LC			16/11/2021 14:09	0.1	0.2	Sandy SILT: brown, medium grained sand, 30% organic material. No odour or staining.
SD110	LC_B			16/11/2021 12:25	0.1	0.2	Sandy SILT: brown, medium grained sand, 50% organic material (decomposing leaves and algal growth). No odour or staining.
SD254	FC1A			26/11/2021 8:45	0	0.1	Silty CLAY: brown with black mottling, high plasticity, 15% organic material (roots). No odour or staining.
SD255	FC1B			26/11/2021 8:50	0.05	0.1	Sandy SILT: dark brown, medium plasticity, 20% organic material (rootlets) and shell fragments. Organic odour, no staining.
SD259	FCD4			26/11/2021 8:15	0.05	0.1	Silty SAND: brown, fine to medium grained, 10% organic material (roots). No odour or staining.
SD326	FC1C			26/11/2021 8:44	0.05	0.1	Silty SAND: brown, fine to medium grained, 20% organic material (rootlets) and shell fragments. No odour or staining.
SS101	SS001, SS01			17/11/2021 14:30	0.05	0.1	Sandy SILT: brown-black, fine grained sand, 15% organic material (grass roots). No odour or staining.
SS102	SS002, SS02			17/11/2021 14:03	0.05	0.1	Sandy SILT: brown-black, medium grained sand, 10% organic material (roots). No odour or staining.
SS103	SS003, SS03			19/11/2021 8:57	0	0.1	Sandy SILT: brown-black, medium grained sand, 10% organic material (roots). No odour or staining.
SS104	SS004, SS04			19/11/2021 8:18	0.05	0.15	Sandy CLAY: brown, fine grained sand, low plasticity, 10-15% organic material (roots). No odour or staining.
SS105	SS005, SS05			17/11/2021 13:02	0	0.1	Silty SAND: light brown, fine to medium grained sand, 15% organic material. No odour or staining.
SS106	SS006, SS06			15/11/2021 16:38	0	0.1	Sandy CLAY: dark brown, fine grained sand, 20% organic material. No odour or staining.
SS107	SS007, SS07			15/11/2021 12:45	0	0.1	Sandy SILT: brown, <10% organic material. No odour or staining.
SS108	SS008, SS08			15/11/2021 11:57	0	0.1	Sandy SILT: brown, 10% organic material. No odour or staining.
SS109	SS009, SS09			15/11/2021 12:12	0	0.1	Sandy SILT: brown, medium grained sand, 20% organic material. No odour or staining.
SS110	SS010, SS10			17/11/2021 12:15	0.05	0.1	Sandy SILT: brown, fine grained sand, low plasticity, 10% organic material (roots). No odour or staining.
SS111	SS011, SS11			17/11/2021 11:04	0	0.1	Gravelly CLAY: brown, fine to medium gravels, low plasticity, >10% organic material. No odour or staining.
SS112	SS012, SS12			17/11/2021 10:47	0.05	0.1	CLAY: brown with orange mottling, low plasticity, 10% organic material (grass roots). No odour or staining.

Notes

n/a Not applicable





Table T5 - Groundwater Analytical Results

		Per- and Poly-fluoroalkyl Substances																																
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)		
LOR		0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01		
PFAS NEMP 2020 Drinking Water		0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%		19	0.00023																															

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	0.29	0.14	1.19	1.33	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.1	<0.02	0.35	0.02	0.08	<0.02	<0.02	<0.02	0.04	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.39	2.29	
MW179S	MW179S	16/11/2021	0908_MW179S_211116	Normal	ES2143044	0.29	0.14	1.19	1.33	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.1	<0.02	0.35	0.02	0.08	<0.02	<0.02	<0.02	0.04	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.39	2.29		
MW196	MW196	10/11/2021	0908_MW196_211110	Normal	ES2143044	0.21	23.1	1.53	24.6	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.07	<0.02	0.38	0.15	0.05	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	25.6	25.4		
MW198	MW198	10/11/2021	0908_MW198_211110	Normal	ES2143044	0.16	6.07	5.53	11.6	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.45	0.1	<0.02	0.61	0.22	0.07	<0.02	<0.02	<0.02	0.22	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	13.4	12.8		
MW202D	MW202D	10/11/2021	0908_MW202D_211110	Normal	ES2143044	<0.01	0.04	0.03	0.07	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.07	0.07		
MW202S	MW202S	10/11/2021	0908_MW202S_211110	Normal	ES2143044	0.02	0.34	0.11	0.45	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.55	0.55		
MW208	MW208	8/11/2021	0908_MW208_211108	Normal	ES2143044	0.27	11.7	4.05	15.8	<0.05	1.29	<0.05	<0.05	<0.02	<0.02	<0.05	0.35	0.3	0.02	1.8	0.15	0.14	<0.02	<0.02	<0.02	0.24	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	20.5	20		
MW209D	MW209D	8/11/2021	0908_MW209D_211108	Normal	ES2143044	<0.01	0.12	0.01	0.13	<0.05	0.16	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.29	0.29		
MW209S	MW209S	8/11/2021	0908_MW209S_211108	Normal	ES2143044	0.01	2.2	0.14	2.34	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.35	2.35		
MW212	MW212	8/11/2021	0908_MW212_211108	Normal	ES2143044	0.02	0.13	0.18	0.31	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.39	0.39		
MW231D	MW231D	12/11/2021	0908_MW231D_211112	Normal	ES2143047	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW231S	MW231S	12/11/2021	0908_MW231S_211112	Normal	ES2143047	<0.01	0.02	0.02	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.04	0.04		
MW232D	MW232D	11/11/2021	0908_QC202_211111	Interlab_D	284113	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.05	<0.02	<0.01	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	<0.01	-
MW232D	MW232D	11/11/2021	0908_MW232D_211111	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW232S	MW232S	11/11/2021	0908_MW232S_211111	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW235D	MW235D	19/11/2021	0908_MW235D_211119	Normal	ES2143052	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW235S	MW235S	19/11/2021	0908_MW235S_211119	Normal	ES2143052	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW236D	MW236D	11/11/2021	0908_MW236D_211111	Normal	ES2143045	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW236S	MW236S	11/11/2021	0908_MW236S_211111	Normal	ES2143045	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW238D	MW238D	11/11/2021	0908_MW238D_211111	Normal	ES2143046	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW238S	MW238S	11/11/2021	0908_MW238S_211111	Normal	ES2143046	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW241D	MW241D	15/11/2021	0908_MW241D_211115	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW241S	MW241S	15/11/2021	0908_MW241S_211115	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW244D	MW244D	10/11/2021	0908_MW244D_211110	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW244S	MW244S	10/11/2021	0908_MW244S_211110	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW244S	MW244S	10/11/2021	0908_QC103_211110	Field_D	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
MW247D	MW247D	12/11/2021	0908_MW247D_211112	Normal	ES2143044	<0.01	0.05	0.01	0.06	<0.05	&																											

Table T5 - Groundwater Analytical Results

		Per- and Poly-fluoroalkyl Substances																															
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)	
LOR		0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	
PFAS NEMP 2020 Drinking Water		0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%		19	0.00023																														

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	3.1	234	21.4	255	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	1.9	0.53	0.04	4.89	8.86	0.63	<0.02	<0.02	<0.02	1.63	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	277	266	
MW281S	MW281S	10/11/2021	0908_MW281S_211110	Normal	ES2143044	0.28	1.48	9.48	11	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.7	0.32	<0.02	2.25	0.34	0.21	<0.02	<0.02	<0.02	0.8	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	16	14.9	
MW316D	MW319D	11/11/2021	0908_MW316D_211111	Normal	ES2143044	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	
MW317S	MW317S	18/11/2021	0908_MW317S_211118	Normal	ES2143044	<0.01	0.07	0.02	0.09	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.09	
MW317S	MW317S	18/11/2021	0908_QC102_211118	Field_D	ES2143044	<0.01	0.08	0.02	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.1	0.1	
MW318D	MW318D	15/11/2021	0908_MW318D_211115	Normal	ES2143044	0.02	0.03	0.52	0.55	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	0.05	<0.02	0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.22	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.31	1.16
MW318S	MW318S	15/11/2021	0908_MW318S_211115	Normal	ES2143044	<0.01	0.01	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.01	0.01
MW433	W33	8/11/2021	0908_MW433_211108	Normal	ES2143044	<0.01	0.05	0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.1	0.1	
MW466	W66	16/11/2021	0908_MW466_211116	Normal	ES2143044	0.41	16	3.73	19.7	<0.05	0.08	<0.05	<0.05	<0.02	<0.02	<0.05	0.26	0.3	<0.02	0.87	0.4	0.13	0.06	<0.02	<0.02	0.22	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	22.6	21.8	
MW468	W68	16/11/2021	0908_QC208_211116	Interlab_D	284113	0.32	14	5.3	19	<0.01	0.09	<0.02	<0.02	<0.02	<0.1	<0.5	0.34	0.25	<0.01	0.87	0.3	0.18	<0.02	<0.05	<0.02	0.23	0.2	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	22	-	
MW468	W68	16/11/2021	0908_MW468_211116	Normal	ES2143044	0.34	14.9	5.74	20.6	<0.05	0.06	<0.05	<0.05	<0.02	<0.02	<0.05	0.38	0.28	<0.02	0.93	0.26	0.15	0.02	<0.02	<0.02	0.27	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	23.5	22.9	
MW829	PS9_BORE 30	15/11/2021	0908_MW829_211115	Normal	ES2143044	<0.01	0.02	0.03	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05	
POT085	BWS085	19/11/2021	0908_POT085_211119	Normal	ES2143051	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	
POT382		12/11/2021	0908_POT382_211112	Normal	ES2143047	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	

- Notes
- LOR Limit of Reporting
  - Normal Primary sample
  - Field\_D Intra-laboratory duplicate sample
  - Interlab\_D Inter-laboratory duplicate sample
  - Denotes first time detection above LOR
  - Denotes new exceedence of human health screening criteria
  - Denotes new exceedence of ecological screening criteria

Table T6 - Surface Water Analytical Results

		Per- and Poly-fluoroalkyl Substances																																
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)		
LOR		0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	
PFAS NEMP 2020 Drinking Water		0.56			0.07																													
PFAS NEMP 2020 Recreational Water		10			2																													
PFAS NEMP 2020 Freshwater 99%		19	0.00023																															

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	0.05	2.3	0.53	2.83	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	0.03	<0.02	0.13	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.19	3.11
SW001	MD1	19/11/2021	0908_QC114_211119	Field_D	ES2143123	0.05	2.3	0.53	2.83	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.03	<0.02	0.11	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.94	2.86	
SW001	MD1	19/11/2021	0908_SW001_211119	Normal	ES2143123	0.04	2.18	0.45	2.63	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.03	<0.02	0.11	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.94	2.86	
SW005	MD5	17/11/2021	0908_SW005_211117	Normal	ES2143123	0.02	0.71	0.29	1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.11	1.09		
SW006	MD6	17/11/2021	0908_SW006_211117	Normal	ES2143123	0.14	12	1.49	13.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.13	<0.02	0.44	0.1	0.06	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	14.5	14.3		
SW007	MD7	16/11/2021	0908_QC116_211116	Field_D	ES2143123	0.16	10.5	1.35	11.8	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.12	<0.02	0.42	0.1	0.07	<0.02	<0.02	<0.02	0.07	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	12.9	12.7		
SW007	MD7	16/11/2021	0908_SW007_211116	Normal	ES2143123	0.16	12.8	1.54	14.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	0.13	<0.02	0.48	0.12	0.08	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	15.5	15.3		
SW009	MD8	17/11/2021	0908_SW009_211117	Normal	ES2143123	0.06	2.23	0.79	3.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.03	<0.02	0.17	0.08	0.02	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.5	3.36		
SW014	MD14	17/11/2021	0908_SW014_211117	Normal	ES2143123	0.02	0.91	0.34	1.25	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.08	0.03	<0.02	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.46	1.41		
SW019	TC12	12/11/2021	0908_SW019_211112	Normal	ES2143048	<0.01	0.06	0.03	0.09	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.09		
SW023	TC6A	17/11/2021	0908_QC110_211117	Field_D	ES2143123	0.01	0.17	0.22	0.39	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.48	0.48		
SW023	TC6A	17/11/2021	0908_SW023_211117	Normal	ES2143123	0.01	0.23	0.24	0.47	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.59	0.57		
SW024	TC7	17/11/2021	0908_QC210_211117	Interlab_D	284113-A	<0.01	0.07	0.12	0.19	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	<0.01	<0.02	<0.01	0.02	<0.01	<0.01	<0.02	<0.05	<0.02	<0.01	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	0.21	-		
SW024	TC7	17/11/2021	0908_SW024_211117	Normal	ES2143123	<0.01	0.1	0.12	0.22	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.26	0.26		
SW047	BD03	16/11/2021	0908_SW047_211116	Normal	ES2143123	0.14	9.14	1.54	10.7	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.1	0.12	<0.02	0.47	0.09	0.11	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	11.8	11.6		
SW048	BD04	16/11/2021	0908_SW048_211116	Normal	ES2143123	0.06	0.38	1.01	1.39	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.1	0.04	<0.02	0.26	0.05	0.04	<0.02	<0.02	<0.02	0.14	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.08	1.93		
SW055	DD1	16/11/2021	0908_SW055_211116	Normal	ES2143123	0.06	2.02	0.89	2.91	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.06	<0.02	0.25	0.04	0.04	<0.02	<0.02	<0.02	0.09	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.53	3.41		
SW059	DD2	15/11/2021	0908_SW059_211115	Normal	ES2143123	0.07	1.18	1.16	2.34	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	0.05	<0.02	0.28	0.07	0.04	<0.02	<0.02	<0.02	0.13	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.1	2.91		
SW060	DD3	15/11/2021	0908_SW060_211115	Normal	ES2143123	0.62	13.4	8.04	21.4	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	1.14	0.6	<0.02	3.29	0.63	0.34	<0.02	<0.02	<0.02	1.22	0.4	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	29.7	27.9		
SW062	DD5	17/11/2021	0908_QC211_211117	Interlab_D	284113-A	<0.01	0.05	0.12	0.17	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	0.01	<0.02	<0.01	0.02	<0.01	<0.01	<0.02	<0.05	<0.02	0.01	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	0.21	-		
SW062	DD5	17/11/2021	0908_SW062_211117	Normal	ES2143123	<0.01	0.08	0.13	0.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.25	0.25		
SW079	TC2	12/11/2021	0908_SW079_211112	Normal	ES2143123	<0.01	0.23	0.17	0.4	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.49	0.47		
SW081	TFD1	30/11/2021	0908_SW081_211130	Normal	ES2143600	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01		
SW082	TFD2	19/11/2021	0908_SW082_211119	Normal	ES2143052	0.08	1.31	1.22	2.53	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	0.06	<0.02	0.33	0.08	0.04	<0.02	<0.02	<0.02	0.12	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.37	3.16		
SW108	LC	16/11/2021	0908_SW108_211116	Normal	ES2143123	0.09	4.73	1.03	5.76	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.1	<0.02	0.35	0.06	0.06	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	6.71	6.58		
SW110	LC_B	16/11/2021	0908_SW110_211116	Normal	ES2143123	0.09	5.96	0.96	6.92	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.1	<0.02	0.35	0.05	0.06	<0.02	<0.02	<0.02	0.07	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	7.87	7.75		
SW259	FCD4	26/11/2021	0908_SW259_211126	Normal	ES2143053	0.03	0.66	0.53	1.19	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.04	<0.02	0.17	0.03	0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	&					



Table T7 - Sediment Analytical Results

	Per- and Poly-fluoroalkyl Substances																					
	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)
LOR	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)	0.1			0.01																		
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)	20			2																		
PFAS NEMP 2020 Public open space (HIL C)	10			1																		
PFAS NEMP 2020 Industrial/ commercial (HIL D)	50			20																		
PFAS NEMP 2020 Ecological direct exposure	10	1																				
PFAS NEMP 2020 Ecological indirect exposure		0.01																				

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	<0.0001	0.011	0.0007	0.012	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	<0.0001	<0.0002	<0.0001	<0.0001	0.0001	<0.0001	0.0004	<0.0005	<0.0005	<0.0001	<0.0002
SD001	MD1	19/11/2021	0908_QC215_211119	Interlab_D	284113-A	<0.0001	0.011	0.0007	0.012	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	<0.0001	<0.0002	<0.0001	<0.0001	0.0001	<0.0001	0.0004	<0.0005	<0.0005	<0.0001	<0.0002
SD001	MD1	19/11/2021	0908_SD001_211119	Normal	ES2143123	0.0003	0.0207	0.0031	0.0238	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0009	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD001	MD1	19/11/2021	0908_QC115_211119	Field_D	ES2143123	<0.0002	0.0191	0.0023	0.0214	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD005	MD5	17/11/2021	0908_SD005_211117	Normal	ES2143123	<0.0002	0.0117	0.002	0.0137	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD006	MD6	17/11/2021	0908_SD006_211117	Normal	ES2143123	0.0004	0.131	0.0064	0.137	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	0.0008	<0.0002	0.0008	0.0004	<0.0002	0.0004	0.0003	<0.0002	<0.0002	<0.001
SD007	MD7	16/11/2021	0908_SD007_211116	Normal	ES2143123	<0.0002	0.0471	0.0011	0.0482	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.001
SD009	MD8	17/11/2021	0908_SD009_211117	Normal	ES2143123	<0.0002	0.0171	0.0009	0.018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD014	MD14	17/11/2021	0908_QC212_211117	Interlab_D	284113-A	0.0004	0.059	0.0063	0.065	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	0.0002	0.0004	<0.0001	0.0007	0.0007	0.0002	<0.0002	<0.0005	<0.0005	0.0001	0.0003
SD014	MD14	17/11/2021	0908_SD014_211117	Normal	ES2143123	0.0005	0.0894	0.0083	0.0977	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0004	0.0004	<0.0002	0.001	0.0006	0.0003	<0.0002	<0.0002	<0.0002	0.0006	<0.001
SD019	TC12	12/11/2021	0908_SD019_211112	Normal	ES2143048	<0.0002	0.0053	<0.0002	0.0053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD023	TC6A	17/11/2021	0908_QC113_211117	Field_D	ES2143123	<0.0002	0.001	<0.0002	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD023	TC6A	17/11/2021	0908_SD023_211117	Normal	ES2143123	<0.0002	0.002	<0.0002	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD024	TC7	17/11/2021	0908_QC213_211117	Interlab_D	284113-A	<0.0001	0.0028	0.0004	0.0032	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002
SD024	TC7	17/11/2021	0908_SD024_211117	Normal	ES2143123	<0.0002	0.0034	0.0005	0.0039	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD047	BD03	16/11/2021	0908_SD047_211116	Normal	ES2143123	0.0011	0.364	0.0186	0.383	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0007	0.0006	0.0012	<0.0002	<0.0002	0.003	0.0019	0.0006	0.0051	0.0007	<0.0002	0.0011	<0.001
SD048	BD04	16/11/2021	0908_SD048_211116	Normal	ES2143123	0.0002	0.0039	0.0019	0.0058	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0005	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD055	DD1	16/11/2021	0908_SD055_211116	Normal	ES2143123	<0.0002	0.0038	0.0011	0.0049	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD055	DD1	16/11/2021	0908_QC109_211116	Field_D	ES2143123	<0.0002	0.0048	0.0013	0.0061	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD059	DD2	15/11/2021	0908_SD059_211115	Normal	ES2143123	<0.0002	0.001	<0.0002	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD060	DD3	15/11/2021	0908_SD060_211115	Normal	ES2143123	0.0014	0.0912	0.0227	0.114	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0016	0.0003	<0.0002	0.0029	0.0039	0.0004	<0.0002	<0.0002	<0.0002	0.0015	<0.001
SD062	DD5	17/11/2021	0908_SD062_211117	Normal	ES2143123	<0.0002	0.0036	0.0003	0.0039	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD079	TC2	12/11/2021	0908_SD079_211112	Normal	ES2143123	<0.0002	0.0162	0.0018	0.018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD081	TFD1	17/11/2021	0908_SD081_211117	Normal	ES2143123	<0.0002	0.0062	<0.0002	0.0062	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001
SD082	TFD2	19/11/2021	0908_SD082_211119	Normal	ES2143052	<0.0002	0.0253	0.0026	0.0279	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	0.0003	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.001
SD108	LC	16/11/2021	0908_SD108_211116	Normal	ES2143123	0.0005	0.181	0.0075	0.188	<0.0005	<0.0005	<0.0005	<0.0005	0.0003	0.0002	<0.0005	0.0002	<0.0002	<0.0002	0.0011	0.0007	<0.0002	0.0119	0.001	<0.0002	0.0044	<0.001
SD110	LC_B	16/11/2021	0908_SD110_211116	Normal	ES2143123	<0.0002	0.189	0.0083	0.197	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0003	0.0012	<0.0002	0.0044	0.0005	0.0004	0.0028	<0.0002	<0.0002	0.0022	<0.001
SD254	FC1A	26/11/2021	0908_SD254_211126	Normal	ES2143053	0.0015	0.0416	0.0041	0.0457	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0003	0.0006	0.0006	0.0003	0.0004	<0.0002	<0.		

Table T7 - Sediment Analytical Results

	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)									
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)									
PFAS NEMP 2020 Public open space (HIL C)									
PFAS NEMP 2020 Industrial/ commercial (HIL D)									
PFAS NEMP 2020 Ecological direct exposure									
PFAS NEMP 2020 Ecological indirect exposure									

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	<0.001	<0.005	<0.001	<0.001	<0.0002	<0.001	<0.0002	0.013	-
SD001	MD1	19/11/2021	0908_QC215_211119	Interlab_D	284113-A	<0.001	<0.005	<0.001	<0.001	<0.0002	<0.001	<0.0002	0.013	-
SD001	MD1	19/11/2021	0908_SD001_211119	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0002	<0.0002	0.026	0.0246
SD001	MD1	19/11/2021	0908_QC115_211119	Field_D	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0214	0.0214
SD005	MD5	17/11/2021	0908_SD005_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0137	0.0137
SD006	MD6	17/11/2021	0908_SD006_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.14	0.139
SD007	MD7	16/11/2021	0908_SD007_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0487	0.0484
SD009	MD8	17/11/2021	0908_SD009_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0002	<0.0002	0.0188	0.0182
SD014	MD14	17/11/2021	0908_QC212_211117	Interlab_D	284113-A	<0.001	<0.005	<0.001	<0.001	<0.0002	<0.001	<0.0002	0.068	-
SD014	MD14	17/11/2021	0908_SD014_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.102	0.1
SD019	TC12	12/11/2021	0908_SD019_211112	Normal	ES2143048	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0053	0.0053
SD023	TC6A	17/11/2021	0908_QC113_211117	Field_D	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.001	0.001
SD023	TC6A	17/11/2021	0908_SD023_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.002	0.002
SD024	TC7	17/11/2021	0908_QC213_211117	Interlab_D	284113-A	<0.001	<0.005	<0.001	<0.001	<0.0002	<0.001	<0.0002	0.0032	-
SD024	TC7	17/11/2021	0908_SD024_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0039	0.0039
SD047	BD03	16/11/2021	0908_SD047_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.009	<0.0002	0.408	0.388
SD048	BD04	16/11/2021	0908_SD048_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0067	0.0065
SD055	DD1	16/11/2021	0908_SD055_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0049	0.0049
SD055	DD1	16/11/2021	0908_QC109_211116	Field_D	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0061	0.0061
SD059	DD2	15/11/2021	0908_SD059_211115	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.001	0.001
SD060	DD3	15/11/2021	0908_SD060_211115	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.126	0.12
SD062	DD5	17/11/2021	0908_SD062_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0039	0.0039
SD079	TC2	12/11/2021	0908_SD079_211112	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0182	0.018
SD081	TFD1	17/11/2021	0908_SD081_211117	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0062	0.0062
SD082	TFD2	19/11/2021	0908_SD082_211119	Normal	ES2143052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0002	<0.0002	0.0291	0.0282
SD108	LC	16/11/2021	0908_SD108_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0126	<0.0002	0.221	0.194
SD110	LC_B	16/11/2021	0908_SD110_211116	Normal	ES2143123	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0498	<0.0002	0.259	0.206
SD254	FC1A	26/11/2021	0908_SD254_211126	Normal	ES2143053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0494	0.0481
SD255	FC1B	26/11/2021	0908_SD255_211126	Normal	ES2143053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0003	<0.0002	0.0164	0.0161
SD259	FCD4	26/11/2021	0908_SD259_211126	Normal	ES2143053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.001	0.001
SD326	FC1C	26/11/2021	0908_SD326_211126	Normal	ES2143053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0143	0.0141

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first time detection above LOR

Table T8 - Surface Soil Analytical Results

	Per- and Poly-fluoroalkyl Substances																						
	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)
LOR	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0005
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)	0.1			0.01																			
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)	20			2																			
PFAS NEMP 2020 Public open space (HIL C)	10			1																			
PFAS NEMP 2020 Industrial/ commercial (HIL D)	50			20																			
PFAS NEMP 2020 Ecological direct exposure	10	1																					
PFAS NEMP 2020 Ecological indirect exposure		0.01																					

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	
SS101	SS001, SS01	17/11/2021	0908_SS101_211117	Normal	ES2143044	<0.0002	0.004	0.0004	0.0044	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS102	SS002, SS02	17/11/2021	0908_SS102_211117	Normal	ES2143044	<0.0002	0.0031	<0.0002	0.0031	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS103	SS003, SS03	19/11/2021	0908_SS103_211119	Normal	ES2143044	<0.0002	0.0015	<0.0002	0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS104	SS004, SS04	19/11/2021	0908_QC214_211119	Interlab_D	284113	<0.0001	0.0009	<0.0001	0.0009	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0005	<0.0001	<0.0002	<0.001	
SS104	SS004, SS04	19/11/2021	0908_SS104_211119	Normal	ES2143044	<0.0002	0.0008	<0.0002	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS105	SS005, SS05	17/11/2021	0908_SS105_211117	Normal	ES2143044	<0.0002	0.0004	<0.0002	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS106	SS006, SS06	15/11/2021	0908_SS106_211115	Normal	ES2143044	<0.0002	0.0021	0.0006	0.0027	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS107	SS007, SS07	15/11/2021	0908_SS107_211115	Normal	ES2143044	<0.0002	0.0064	<0.0002	0.0064	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS108	SS008, SS08	15/11/2021	0908_SS108_211115	Normal	ES2143044	<0.0002	0.0027	<0.0002	0.0027	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS109	SS009, SS09	15/11/2021	0908_SS109_211115	Normal	ES2143044	<0.0002	0.002	<0.0002	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS110	SS010, SS10	17/11/2021	0908_SS110_211117	Normal	ES2143044	<0.0002	0.0026	<0.0002	0.0026	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS110	SS010, SS10	17/11/2021	0908_QC112_211117	Field_D	ES2143044	<0.0002	0.0035	<0.0002	0.0035	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	
SS111	SS011, SS11	17/11/2021	0908_SS111_211117	Normal	ES2143044	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.0125 <sup>#1</sup>
SS112	SS012, SS12	17/11/2021	0908_SS112_211117	Normal	ES2143044	<0.0002	0.0012	0.0004	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first time detection above LOR  
 Denotes new exceedence of human health screening criteria  
 Denotes new exceedence of ecological screening criteria  
 #1 Reported Analyte LOR is higher than Requested Analyte LOR

Table T8 - Surface Soil Analytical Results

	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)								
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)								
PFAS NEMP 2020 Public open space (HIL C)								
PFAS NEMP 2020 Industrial/ commercial (HIL D)								
PFAS NEMP 2020 Ecological direct exposure								
PFAS NEMP 2020 Ecological indirect exposure								

Location Code	Alternative Name	Sampled Date	Field ID	Sample Type	Lab Report								
SS101	SS001, SS01	17/11/2021	0908_SS101_211117	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0044	0.0044
SS102	SS002, SS02	17/11/2021	0908_SS102_211117	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0031	0.0031
SS103	SS003, SS03	19/11/2021	0908_SS103_211119	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0015	0.0015
SS104	SS004, SS04	19/11/2021	0908_QC214_211119	Interlab_D	284113	<0.005	<0.001	<0.001	<0.0002	<0.001	<0.0002	0.0009	-
SS104	SS004, SS04	19/11/2021	0908_SS104_211119	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	0.0008
SS105	SS005, SS05	17/11/2021	0908_SS105_211117	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0004	0.0004
SS106	SS006, SS06	15/11/2021	0908_SS106_211115	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.003	0.003
SS107	SS007, SS07	15/11/2021	0908_SS107_211115	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0064	0.0064
SS108	SS008, SS08	15/11/2021	0908_SS108_211115	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0027	0.0027
SS109	SS009, SS09	15/11/2021	0908_SS109_211115	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.002	0.002
SS110	SS010, SS10	17/11/2021	0908_SS110_211117	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	0.0026
SS110	SS010, SS10	17/11/2021	0908_QC112_211117	Field_D	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0035	0.0035
SS111	SS011, SS11	17/11/2021	0908_SS111_211117	Normal	ES2143044	<0.0125 <sup>#1</sup>	<0.0125 <sup>#1</sup>	<0.0125 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>	<0.005 <sup>#1</sup>
SS112	SS012, SS12	17/11/2021	0908_SS112_211117	Normal	ES2143044	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0016	0.0016

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first time detection above LOR  
 Denotes new exceedence of human health screening criteria  
 Denotes new exceedence of ecological screening criteria  
 #1 Reported Analyte LOR is higher than Requested Analyte LOR







Table T9 - Historical Groundwater Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS								PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EiFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EiFOSE)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																			
PFAS NEMP 2020 Drinking Water						0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	
PFAS NEMP 2020 Freshwater 99%						0.56	0.00023	0.07																											

Table T9 - Historical Groundwater Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS								PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides										
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)	Sum of PFAS			
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR																																						
PFAS NEMP 2020 Drinking Water						0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002				
PFAS NEMP 2020 Freshwater 99%						19	0.00023																															
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)	Sum of PFAS			
MW121	MW121	4/11/2019	0908_MW121_191104	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
MW121	MW121	18/05/2020	0908_MW121_200518	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW121	MW121	23/11/2020	0908_MW121_201123	Normal	NSW_0908_PFA_SOMP	<0.0100	0.15	0.17	0.32	0.03	0.02			<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.39
MW121	MW121	13/05/2021	0908_MW121_210513	Normal	NSW_0908_PFA_SOMP	<0.0100	0.04	0.03	0.07					<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.07
MW121	MW121	9/11/2021	0908_MW121_211109	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW122	MW122	13/11/2014	MW122_13112014	Normal	NSW_0908_PFA_S	<0.0100	<0.0100	0.03	0.03	<0.0100				<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW122	MW122	15/02/2016	MW122_15022016	Normal	NSW_0908_PFA_S	<0.0100	<0.0100	0.05	0.05	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.05
MW122	MW122	15/02/2016	QC135_WG_15022016	Field_D	NSW_0908_PFA_S	<0.0100	<0.0100	0.05	0.05	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.05
MW122	MW122	6/04/2018	MW122_GW_06042018	Normal	NSW_0908_PFA_S	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW122	MW122	21/11/2018	0908_QC201_181121	Interlab_D	NSW_0908_PFA_S	<0.0100	<0.0200	0.019	0.039	<0.0100	<0.0100	<0.0100	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	-
MW122	MW122	21/11/2018	0908_QC102_181121	Field_D	NSW_0908_PFA_S	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW122	MW122	23/05/2019	0908_MW122_190523	Normal	NSW_0908_PFA_S	<0.0100	<0.0100	0.02	0.02	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW122	MW122	23/05/2019	0908_MW122_190523	Normal	NSW_0908_PFA_S			0.03																														
MW122	MW122	5/11/2019	0908_MW122_191105	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	0.02	0.02	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.02
MW122	MW122	20/05/2020	0908_MW122_200520	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	0.02	0.02	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.02
MW122	MW122	24/11/2020	0908_MW122_201124	Normal	NSW_0908_PFA_SOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
MW123	MW123	12/11/2014	MW123_12112014	Normal	NSW_0908_PFA_S	0.02	0.49	0.25	0.73	0.03			<0.0100																									
MW123	MW123	8/10/2015	MW123	Normal	NSW_0908_PFA_S	<0.0200	0.1		0.1																													
MW123	MW123	29/01/2016	MW123_29012016	Normal	NSW_0908_PFA_S	0.03	0.76		0.76																													
MW123	MW123	11/01/2017	MW123_GW_11012017	Normal	NSW_0908_PFA_S	0.03	1.12	0.41	1.53	0.26	<0.0200	0.04	<0.0200	<0.100	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	1.91
MW123	MW123	28/03/2018	MW123_GW_28032018	Normal	NSW_0908_PFA_S	0.03	0.8	0.68	1.48	0.07	0.07	0.0																										









Table T9 - Historical Groundwater Analytical Results

Location	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS								PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)	Sum of PFAS
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	
PFAS NEMP 2020 Drinking Water						0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%						19	0.00023																												

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)	Sum of PFAS				
MW161S	MW161 S	26/02/2016	MW161S_26022016	Normal	NSW 0908 PFAS	0.04	2.26	1.32	3.58	0.13	-	-	<0.0200	-	-	0.23	0.04	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.500	-	<0.100	<0.100	-	<0.0200	<0.500	-	<0.500	<0.0500	-	<0.500	<0.0500	-	<0.500	-	
MW161S	MW161 S	26/02/2016	MW161S_26022016	Normal	NSW 0908 PFAS	0.07	2.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW161S	MW161 S	8/02/2017	MW161S_GW_08022017	Normal	NSW 0908 PFAS	0.08	2.66	1.4	4.06	0.09	0.11	0.06	<0.0200	<0.100	0.06	0.19	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	0.06	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	4.75
MW161S	MW161 S	30/05/2019	0908_MW161S_190530	Normal	NSW 0908 PFAS	0.03	1.91	1.09	3	0.03	0.04	0.05	<0.0200	<0.100	0.02	0.07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	3.24	
MW161S	MW161 S	21/05/2020	0908_MW161S_200521	Normal	NSW 0908 PFASOMP	0.06	2.39	1.22	3.61	0.12	0.1	0.07	<0.0200	<0.100	0.06	0.23	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	4.28	
MW161S	MW161 S	26/05/2021	0908_MW161S_210526	Normal	NSW 0908 PFASOMP	0.05	3.64	0.96	4.6	0.06	0.08	0.08	<0.0200	<0.100	0.05	0.16	0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	0.04	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	5.14	
MW162D	MW162 D	29/01/2016	MW162D_29012016	Normal	NSW 0908 PFAS	<0.0100	<0.0100	-	<0.0100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.100	-	-	-	-	-	-	-	-	-	-	-		
MW162D	MW162 D	10/01/2017	MW162D_GW_10012017	Normal	NSW 0908 PFAS	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	27/03/2018	MW162D_GW_27032018	Normal	NSW 0908 PFAS	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	20/11/2018	0908_MW162D_181120	Normal	NSW 0908 PFAS	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	22/05/2019	0908_MW162D_190522	Normal	NSW 0908 PFAS	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	4/11/2019	0908_MW162D_191104	Normal	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	18/05/2020	0908_MW162D_200518	Normal	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	23/11/2020	0908_MW162_D_201123	Normal	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	18/05/2021	0908_MW162D_210518	Normal	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	18/05/2021	0908_QC104_210518	Field_D	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162D	MW162 D	12/11/2021	0908_MW162D_211112	Normal	NSW 0908 PFASOMP	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162S	MW162 S	29/01/2016	MW162S_29012016	Normal	NSW 0908 PFAS	<0.0100	<0.0100	-	<0.0100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.100	-	-	-	-	-	-	-	-	-	-	-		
MW162S	MW162 S	10/01/2017	MW162S_GW_10012017	Normal	NSW 0908 PFAS	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200
MW162S	MW162 S	27/03/2018	MW162S_GW_27032018	Normal	NSW 0																																		





Table T9 - Historical Groundwater Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS								PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides						Sum of PFAS	
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)		N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		µg/L
LOR																																			
PFAS NEMP 2020 Drinking Water						0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002	
PFAS NEMP 2020 Freshwater 99%						19	0.00023		0.07																										

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)	Sum of PFAS		
MW169D	MW169 D	30/05/2019	0908_MW169D_190530	Normal	NSW 0908 PFAS	<0.0100	0.11	0.15	0.26	0.03	0.03	<0.0200	<0.0200	<0.100	<0.0200	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	0.37	
MW169D	MW169 D	6/11/2019	0908_MW169D_191107	Normal	NSW 0908 PFASOMP	0.09	0.71	5.54	6.25	1.46	1.34	0.1	<0.0200	0.2	0.58	2.22	0.12	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	12.4	
MW169D	MW169 D	6/11/2019	0908_QC103_191107	Field_D	NSW 0908 PFASOMP	0.09	0.67	5.44	6.11	1.37	1.2	0.09	<0.0200	0.2	0.49	2.48	0.14	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	12.2
MW169D	MW169 D	7/11/2019	0908_QC203_191107	Interlab_D	NSW 0908 PFASOMP	0.062	0.52	5.2	-	1.2	0.95	0.049	<0.0100	0.23	0.43	1.9	0.12	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	<0.0100	0.074	<0.0100	<0.0100	<0.0100	<0.0100	<0.0500	<0.0100	<0.0500	<0.0100	<0.0500	<0.0100	-
MW169D	MW169 D	13/05/2020	0908_MW169D_200513	Normal	NSW 0908 PFASOMP	0.03	0.28	2.18	2.46	0.47	0.56	0.03	<0.0200	<0.100	0.18	1.01	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	4.8	
MW169D	MW169 D	16/11/2020	0908_MW169_D_201116	Normal	NSW 0908 PFASOMP	<0.0100	0.06	0.33	0.39	0.08	0.06	<0.0200	<0.0200	<0.100	0.03	0.15	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	0.08	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	0.79	
MW169D	MW169 D	18/05/2021	0908_MW169D_210518	Normal	NSW 0908 PFASOMP	<0.0100	0.09	0.43	0.52	0.12	0.09	<0.0200	0.04	<0.100	0.03	0.18	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	0.1	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	1.08	
MW169D	MW169 D	16/11/2021	0908_MW169D_211116	Normal	NSW 0908 PFASOMP	<0.0100	0.08	0.21	0.29	0.08	0.04	<0.0200	<0.0200	<0.100	<0.0200	0.11	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	0.06	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	0.58	
MW169S	MW169 S	13/01/2016	MW169S_13012016	Normal	NSW 0908 PFAS	0.05	0.2	-	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.100	<0.100	-	-	-	-	-	-	-	-		
MW169S	MW169 S	2/09/2016	MW169S_020916	Normal	NSW 0908 PFAS	0.01	0.2	0.4	0.6	0.02	-	-	<0.0100	<0.0500	0.02	0.13	0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	-	
MW169S	MW169 S	12/10/2016	MW169S_121016	Normal	NSW 0908 PFAS	0.01	0.23	0.38	0.61	0.02	-	-	<0.0100	<0.0500	0.02	0.14	0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	-	
MW169S	MW169 S	16/01/2017	MW169S_160117	Normal	ACTNSW_Hist_202012-3	0.00006	0.00011	0.00051	-	0.00002	-	-	0.000010	0.000050	0.00003	0.00019	0.00002	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000050	0.000010	-	-	-	-	-	-	-	
MW169S	MW169 S	16/01/2017	MW169S_160117	Normal	NSW 0908 PFAS	0.06	0.11	0.51	0.62	0.02	-	-	<0.0100	<0.0500	0.03	0.19	0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	-	
MW169S	MW169 S	17/01/2017	MW169S_GW_17012017	Normal	NSW 0908 PFAS	0.08	0.16	0.68	0.84	<0.0200	0.05	0.1	<0.0200	<0.100	0.05	0.22	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	1.4
MW169S	MW169 S	3/05/2017	MW169S_030517	Normal	ACTNSW_Hist_202012-3	0.05	0.18	0.88	-	0.07	0.07	0.06	<0.0100	<0.0500	0.03	0.17	0.03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	-
MW169S	MW169 S	5/09/2018	0908_MW169S_180905	Normal	NSW 0908 PFASMGMT	0.06	0.08	0.86	0.94	0.02	0.03	0.05	<0.0200	<0.100	0.02	0.15	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	1.27
MW169S	MW169 S	22/01/2019	0908_MW169S_190122	Normal	NSW 0908 PFASMGMT	0.03	0.05	0.56	0.61	0.02	0.02	0.05	<0.0200	0.4	<0.0200	0.1	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	1.23
MW169S	MW169 S	30/05/2019	0908_MW169S_190530	Normal	NSW 0908 PFAS	0.03	0.17	0.35	0.52	<0.0200	<0.0200	0.07	<0.0200	<0.100	<0.0200	0.07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	0.69
MW169S	MW169 S	24/09/2019	0908_MW169S_190924	Normal	NSW 0908 PFASMGMT	0.02	0.1	0.46	0.56	<0.0200	0.03	0.04	<0.0200	<0.100	<0.0200	0.07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	0.72
MW169S	MW169 S	6/11/2019	0908_MW169S_191107	Normal	NSW 0908 PFASOMP	0.02	0.15	0.37	0.52	<0.0200	<0.0200	0.04	<0.0200	<0.100	<0.0200	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0500	<0.0200	<0.0500	<0.0500	0.62
MW169S	MW169 S	13/05/2020	0908_MW169S_200513	Normal	NSW 0908 PFASOMP	<0.0500	0.31	0.26	0.57	<0.0500	<0.0500	0.05	<0.0																								







Table T9 - Historical Groundwater Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS								PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides									
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EiFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EiFOSE)	Sum of PFAS		
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
OR																																					
PFAS NEMP 2020 Drinking Water						0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0002				
PFAS NEMP 2020 Freshwater 99%						19	0.00023																														
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EiFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EiFOSE)	Sum of PFAS		
MW208	MW208	27/01/2016	MW208_27012016	Normal	NSW 0908 PFAS	0.1	13.2	-	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	MW208	27/01/2016	QC114_WG_27012016	Interlab_D	NSW 0908 PFAS	0.082	12	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	MW208	26/08/2016	MW208_260816	Normal	NSW 0908 PFAS	0.23	13	2.8	15.8	0.16	-	-	<0.0100	0.1	0.22	2.2	0.34	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW208	MW208	18/10/2016	MW208_181016	Normal	NSW 0908 PFAS	0.2	12	11	23	0.1	-	-	<0.0100	0.06	0.12	0.97	0.62	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW208	MW208	18/10/2016	QC103_181016	Field_D	NSW 0908 PFAS	0.17	10	9.4	19.4	0.1	-	-	<0.0100	<0.0500	0.11	0.79	0.48	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW208	MW208	17/01/2017	MW208_170117	Normal	ACTNSW_Hist_202012-3	0.00035	0.013	0.0041	-	0.00005	-	-	<0.00010	0.00007	0.00006	0.00044	0.00008	0.00002	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000050	0.000010	-	0.000050	-	0.000050	-	0.000050	-	0.000050	-		
MW208	MW208	17/01/2017	MW208_170117	Normal	NSW 0908 PFAS	0.35	13	4.1	17.1	0.05	-	-	<0.0100	0.07	0.06	0.44	0.08	0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW208	MW208	19/01/2017	MW208_GW_170119	Normal	NSW 0908 PFAS	0.32	8.8	7.72	16.5	0.13	0.16	0.28	<0.0200	<0.100	0.1	0.53	0.09	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	18.1	
MW208	MW208	19/01/2017	MW208_GW_170119	Normal	NSW 0908 PFAS	-	-	-	16.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	MW208	9/05/2017	MW208_090517	Normal	ACTNSW_Hist_202012-3	0.92	17	5.7	-	0.11	0.18	0.34	<0.0100	0.22	0.3	0.84	0.34	0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW208	MW208	28/05/2019	0908_MW208_190528	Normal	NSW 0908 PFAS	0.12	8.37	1.94	10.3	0.02	0.04	0.21	<0.0200	<0.100	0.05	0.19	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	11	
MW208	MW208	28/05/2019	0908_MW208_190528	Normal	NSW 0908 PFAS	-	-	-	10.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	MW208	17/01/2019	0908_MW208_191017	Normal	NSW 0908 PFASMGMT	0.1	6.98	1.13	8.11	0.04	0.07	0.13	<0.0200	<0.100	0.07	0.18	0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	8.72	
MW208	MW208	6/11/2019	0908_MW208_191106	Normal	NSW 0908 PFASOMP	0.09	6.86	1.3	8.16	0.04	0.05	0.12	<0.0200	<0.100	0.09	0.25	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	8.85	
MW208	MW208	12/05/2020	0908_MW208_200512	Normal	NSW 0908 PFASOMP	0.1	7.06	1.17	8.23	0.03	0.04	0.21	<0.0200	<0.100	0.04	0.1	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	8.75	
MW208	MW208	17/11/2020	0908_MW208_201117	Normal	NSW 0908 PFASOMP	0.54	21.7	5.67	27.4	0.14	0.42	1.16	<0.0200	0.1	0.26	1	0.18	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	31.2	
MW208	MW208	14/05/2021	0908_MW208_210514	Normal	NSW 0908 PFASOMP	0.18	9.62	2.8	12.4	0.67	0.7	0.19	<0.0200	0.1	0.38	1.22	0.12	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	16	
MW208	MW208	8/11/2021	0908_MW208_211108	Normal	NSW 0908 PFASOMP	0.27	11.7	4.05	15.8	0.24	0.35	0.15	<0.0200	0.2	0.3	1.8	0.14	0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	20.5		
MW209D	MW209 D	12/01/2016	MW209D_12012016	Normal	NSW 0908 PFAS	0.02	2.5	-	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW209D	MW209 D	25/08/2016	MW209D_250816	Normal	NSW 0908 PFAS	0.02	0.44	0.26	0.7	<0.0100	-	-	<0.0100	<0.0500	<0.0100	0.03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
MW209D	MW209 D	19/10/2016	MW209D_191016	Normal	NSW 0908 PFAS	0.02	0.55	0.33	0.88	<0.0100	-	-	<0.0100	<0.0500	<0.0100	0.03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
MW209D	MW209 D	13/01/2017	MW209D_130117	Normal	ACTNSW_Hist_202012-3	0.00001	0.00023	0.00019	-	<0.00010	-	-	<0.00010	<0.00050	<0.00010	0.00002	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	-	<0.00050	-	<0.00050	-	<0.00050	-	<0.00050	-		
MW209D	MW209 D	17/01/2017	MW209D_GW_170117	Normal	NSW 0908 PFAS	0.02	0.66	0.26	0.92	<0.0200	<0.0200	0.02	<0.0200	<0.100	<0.0200	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200						























Table T9 - Historical Groundwater Analytical Results

	PFAS				PFAS - Perfluoroalkyl Carboxylic Acids												PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides												
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUeDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS			
LOR	0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.001	0.0002		
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
POT144	BWS144	4/06/2019	0908_BWS144_190604	Normal	NSW_0908_PFAS	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
POT144	BWS144	27/05/2020	0908_POT144_200527	Normal	NSW_0908_PFASOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
POT144	BWS144	13/05/2021	0908_POT144_210513	Normal	NSW_0908_PFASOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
POT156	BWS156	9/11/2015	BWS156_091115	Normal	NSW_0908_PFAS	<0.0200	<0.0200	-	<0.0200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT156	BWS156	20/02/2017	BWS156_200217	Normal	NSW_0908_PFAS	<0.0100	0.02	<0.0200	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT156	BWS156	3/06/2019	0908_BWS156_190603	Normal	NSW_0908_PFAS	0.02	0.06	<0.0200	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.11
POT156	BWS156	3/06/2019	0908_BWS156_190603	Normal	NSW_0908_PFAS	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT184	BWS184	24/11/2015	BSW184_241115	Normal	NSW_0908_PFAS	<0.0200	<0.0200	-	<0.0200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT184	BWS184	8/02/2017	BWS184_080217	Normal	NSW_0908_PFAS	0.02	0.02	<0.0200	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT184	BWS184	5/06/2019	0908_BWS184_190605	Normal	NSW_0908_PFAS	0.02	0.02	<0.0200	0.02	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.04
POT184	BWS184	5/06/2019	0908_BWS184_190605	Normal	NSW_0908_PFAS	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT236	BWS236	24/08/2016	BWS236_240816	Normal	NSW_0908_PFAS	<0.0100	0.05	0.03	0.08	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.08
POT236	BWS236	24/08/2016	QC99_240816	Field_D	NSW_0908_PFAS	<0.0100	0.05	0.02	0.07	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.07
POT236	BWS236	27/02/2017	BWS236_270217	Normal	NSW_0908_PFAS	<0.0100	0.06	0.1	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT236	BWS236	3/06/2019	0908_BWS236_190603	Normal	NSW_0908_PFAS	<0.0100	0.03	0.06	0.09	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.09
POT236	BWS236	28/05/2020	0908_POT236_200528	Normal	NSW_0908_PFASOMP	<0.0100	0.04	0.12	0.16	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.16
POT236	BWS236	12/05/2021	0908_POT236_210512	Normal	NSW_0908_PFASOMP	<0.0100	0.06	0.02	0.08	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.08
POT252	BWS252	27/09/2016	BWS252_220916	Normal	NSW_0908_PFAS	<0.0100	<0.0100	<0.0200	<0.0200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT252	BWS252	27/09/2016	QC107_220916	Field_D	NSW_0908_PFAS	<0.0100	<0.0100	<0.0200	<0.0200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT252	BWS252	14/02/2017	BWS252_140217	Normal	NSW_0908_PFAS	<0.0100	<0.0100	<0.0200	<0.0200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT257	BWS257	7/10/2016	BWS257_071016	Normal	NSW_0908_PFAS	0.01	0.02	<0.0200	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT257	BWS257	1/03/2017	BWS257_010317	Normal	NSW_0908_PFAS	0.02	0.02	<0.0200	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT257	BWS257	25/05/2020	0908_POT257_200525	Normal	NSW_0908_PFASOMP	0.01	0.03	<0.0200	0.03	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.04
POT257	BWS257	13/05/2021	0908_POT257_210513	Normal	NSW_0908_PFASOMP	<0.0100	<0.0100	<0.0200	<0.0100	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200

Notes  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample

Table T10 - Historical Surface Water Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PFAS NEMP 2020 Drinking Water						0.06	0.82	0.56	1.38	0.04	-	-	<0.0100	-	0.02	0.13	0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100		
PFAS NEMP 2020 Recreational Water						0.56																												
PFAS NEMP 2020 Freshwater 99%						10			2																									
						19	0.00023																											















Table T10 - Historical Surface Water Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids							PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.005	0.01	0.05	0.005	0.01	0.05		
PFAS NEMP 2020 Drinking Water						0.56			0.07																									
PFAS NEMP 2020 Recreational Water						10			2																									
PFAS NEMP 2020 Freshwater 99%						19	0.00023																											
SW047	BD03	10/02/2017	BD03 SW 100217	Normal	NSW 0908 PFAS	<0.0500	2.16	0.91	3.07	<0.0500	0.08	0.06	<0.0500	<0.200	<0.0500	0.08	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW047	BD03	17/02/2017	BD03 SW 17022017	Normal	NSW 0908 PFAS	0.04	1.68	0.64	2.32	0.04	0.05	0.02	<0.0200	<0.100	0.03	0.08	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	24/02/2017	BD03 SW 240217	Normal	NSW 0908 PFAS	0.05	2.16	0.65	2.81	0.05	0.05	0.04	<0.0200	<0.100	0.04	0.1	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	24/02/2017	QC409 SW 240217	Field_D	NSW 0908 PFAS	0.06	2.65	0.77	3.42	0.05	0.06	0.05	<0.0200	<0.100	0.04	0.12	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	24/02/2017	QC508 SW 24022017	Interlab_D	NSW 0908 PFAS	<0.0200	7.2	0.28	1.48	0.017	-	-	<0.0200	<0.0500	<0.0200	0.053	<0.0100	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	3/03/2017	BD03 SW 030317	Normal	NSW 0908 PFAS	0.03	1.65	0.28	1.93	<0.0200	<0.0200	<0.0200	<0.100	<0.0200	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	10/03/2017	BD03 SW 100317	Normal	NSW 0908 PFAS	0.06	1.78	0.79	2.57	0.04	0.06	0.03	<0.0200	<0.100	<0.0200	0.13	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	17/03/2017	BD03 SW 20170317	Normal	NSW 0908 PFAS	0.06	3.45	1.12	4.57	0.04	0.06	0.05	<0.0200	<0.100	0.03	0.16	0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	22/03/2017	BD03 SW 220317	Normal	NSW 0908 PFAS	0.06	1.73	0.98	2.71	0.07	0.08	0.04	<0.0200	<0.100	0.03	0.16	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200
SW047	BD03	31/03/2017	BD03 SW 310317	Normal	NSW 0908 PFAS	0.09	4.62	1	5.62	0.05	0.08	0.06	<0.0200	<0.100	0.06	0.22	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	7/04/2017	BD03 SW 070417	Normal	NSW 0908 PFAS	0.12	3.59	1.74	5.33	0.12	0.13	0.07	<0.0200	<0.100	0.11	0.24	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	5/05/2017	BD03 SW 050517	Normal	NSW 0908 PFAS	0.08	3.28	1.53	4.81	0.11	0.17	0.1	<0.0200	<0.100	<0.0200	0.34	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	5/05/2017	QC417 050517	Field_D	NSW 0908 PFAS	0.07	2.62	1.43	4.05	0.12	0.14	0.08	<0.0200	<0.100	<0.0200	0.29	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	5/05/2017	QC 516 050517	Field_D	NSW 0908 PFAS	0.061	1.6	0.93	2.53	0.093	-	-	<0.0200	0.077	0.2	0.34	0.061	<0.0100	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	2/06/2017	BD03 SW 020617	Normal	NSW 0908 PFAS	0.04	1.77	1.01	2.78	0.09	0.1	0.06	<0.0200	<0.100	0.12	0.25	0.07	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	21/07/2017	BD03 SW 210717	Normal	NSW 0908 PFAS	0.05	2.06	0.92	2.98	0.06	0.09	0.06	<0.0200	<0.100	0.12	0.18	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	12/04/2018	BD03 SW 13042018	Normal	NSW 0908 PFAS	0.08	4.95	0.88	5.83	0.04	0.06	0.07	<0.0200	<0.100	0.07	0.16	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	7/12/2018	0908 BD03 SW 181207	Normal	NSW 0908 PFAS	0.12	6.69	1.42	8.11	0.05	0.08	0.09	<0.0200	<0.100	0.15	0.27	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	9/04/2019	0908 BD03 190409	Normal	NSW 0908 PFAS	0.12	9.16	1.63	10.79	0.09	0.13	0.15	<0.0200	<0.100	0.08	0.35	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	9/04/2019	0908 QC100 190409	Field_D	NSW 0908 PFAS	0.12	9.91	1.71	11.62	0.08	0.14	0.15	<0.0200	<0.100	0.08	0.36	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	14/06/2019	0908 BD03 SW 190614	Normal	NSW 0908 PFAS	0.09	3.78	0.73	4.51	0.03	0.05	0.05	<0.0200	<0.100	0.1	0.2	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	6/11/2019	0908 BD03 SW 191106	Normal	NSW 0908 PFASOMP	0.08	5.12	0.99	6.11	0.09	0.06	0.08	<0.0200	<0.100	0.1	0.28	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	6/11/2019	0908 BD04 SW 191106	Normal	NSW 0908 PFASOMP	0.05	0.15	0.83	0.98	0.1	0.06	0.03	<0.0200	<0.100	0.03	0.22	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	
SW047	BD03	22/05/2020	0908 SW047 200522	Normal	NSW 0908 PFASOMP	0.04	3.79	0.68	4.47	0.05	0.06	0.05	<0.0200	<0.100	0.08	0.16	0.04	<0.0200	<0.0200	<0.0200	<0.0													

Table T10 - Historical Surface Water Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOESE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PFAS NEMP 2020 Drinking Water						0.02	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.005	0.01	0.005	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Recreational Water						10		2																										
PFAS NEMP 2020 Freshwater 99%						19	0.00023																											





Table T10 - Historical Surface Water Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSA-A)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EFOSA-A)
PFAS NEMP 2020 Drinking Water						0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Freshwater 99%						10	0.00023		2																								
SW059	DD2	11/05/2021	0908 SW059 210511	Normal	NSW 0908 PFASOMP	0.06	1.28	0.94	2.22	0.06	0.08	0.06	<0.0200	<0.100	0.04	0.18	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	





Table T10 - Historical Surface Water Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
						Perfluoroacetic acid (PFOA)	Perfluorooctanoic acid (PFOS)	Perfluorohexanoic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBS)	Perfluoropentanoic acid (PFPeS)	Perfluoroheptanoic acid (PFHpS)	Perfluorodecanoic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorocane sulfonamide (FOSA)	N-Methyl perfluorocane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOAA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOA)	N-Ethyl perfluorooctane sulfonamide (EFOAA)	N-Ethyl perfluorooctane sulfonamide (EFOSE)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PFAS NEMP 2020 Drinking Water						0.02	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.005	0.01	0.05	0.005	0.01	0.05		
PFAS NEMP 2020 Recreational Water						10		2																										
PFAS NEMP 2020 Freshwater 99%						19	0.00023																											
SW082	TFD2	19/12/2016	TFD2 SW 161219	Normal	NSW 0908 PFAS	0.09	0.8	0.44	1.24	0.09	0.07	<0.0500	<0.0500	<0.100	<0.0500	0.18	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW082	TFD2	12/04/2018	TFD2 SW 12042018	Normal	NSW 0908 PFAS	0.04	1.03	0.91	1.94	0.1	0.08	0.05	<0.0200	<0.100	0.03	0.14	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	7/12/2018	0908 TFD2 SW 181207	Normal	NSW 0908 PFAS	0.05	2.34	0.92	3.26	0.09	0.1	0.04	<0.0200	<0.100	<0.0200	0.18	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	14/06/2019	0908 TFD2 SW 190614	Normal	NSW 0908 PFAS	<0.0500	0.24	0.7	0.94	0.14	0.14	<0.0500	<0.0500	<0.200	<0.0500	0.11	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW082	TFD2	7/11/2019	0908 TFD2 SW 191107	Normal	NSW 0908 PFASOMP	0.07	7.9	0.93	2.83	0.13	0.12	0.08	<0.0500	<0.200	<0.0500	0.22	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW082	TFD2	25/05/2020	0908 SW082 200525	Normal	NSW 0908 PFASOMP	0.04	0.75	1.35	2.1	0.22	0.25	0.05	<0.0200	<0.100	0.06	0.31	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	27/11/2020	0908 SW082 201127	Normal	NSW 0908 PFASOMP	0.09	7.9	1.35	3.25	0.12	0.19	0.11	<0.0200	<0.100	0.05	0.33	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	20/04/2021	0908 QC208 210520	Interlab D	NSW 0908 PFASOMP	0.071	1.4	0.93	-	0.077	0.092	0.051	<0.0100	0.057	0.052	0.21	0.03	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
SW082	TFD2	20/05/2021	0908 QC108 210520	Field D	NSW 0908 PFASOMP	0.11	1.84	1.23	3.07	0.06	0.14	0.1	<0.0200	<0.100	0.09	0.41	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	20/05/2021	0908 SW082 210520	Normal	NSW 0908 PFASOMP	0.1	1.78	1.2	2.98	0.06	0.14	0.1	<0.0200	<0.100	0.07	0.4	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW082	TFD2	19/11/2021	0908 SW082 211119	Normal	NSW 0908 PFASOMP	0.08	1.31	1.22	2.53	0.12	0.13	0.08	<0.0200	<0.100	0.06	0.33	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	23/06/2014	LC1 WATER	Normal	NSW 0908 PFAS	0.13	0.25	0.67	0.92	0.07	-	-	<0.0100	-	0.04	0.35	0.04	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
SW108	LC	20/11/2015	LC SW 20112015	Normal	NSW 0908 PFAS	0.236	13.4	-	13.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	-	-	-	-	-	-	-	-	-	
SW108	LC	14/01/2016	LC SW 1412016	Normal	NSW 0908 PFAS	0.191	10.6	-	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0100	-	-	-	-	-	-	-	-	
SW108	LC	14/09/2016	LC 140916	Normal	NSW 0908 PFAS	0.12	11	1.2	12.2	0.072	0.11	0.12	<0.0100	<0.500	0.081	0.3	0.038	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.013	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	
SW108	LC	16/12/2016	LC SW 161216	Normal	NSW 0908 PFAS	0.1	8.76	1.48	10.2	0.12	0.12	0.14	<0.0200	<0.100	0.07	0.33	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	16/12/2016	LC SW 161216	Normal	NSW 0908 PFAS	-	-	-	10.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW108	LC	3/02/2017	LC SW 030217	Normal	NSW 0908 PFAS	0.1	7.97	0.77	8.74	0.06	0.09	0.04	<0.0200	<0.100	<0.0200	0.46	0.04	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	3/02/2017	QC405 SW 030217	Field D	NSW 0908 PFAS	0.11	9.13	1.14	10.27	0.07	0.09	0.05	<0.0200	<0.100	0.13	0.55	0.05	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	3/02/2017	QC405 SW 030217	Field D	NSW 0908 PFAS	-	-	-	10.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW108	LC	10/02/2017	LC SW 100217	Normal	NSW 0908 PFAS	0.12	4.85	1.43	6.28	0.11	0.14	0.13	<0.0500	<0.200	0.36	0.5	0.08	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW108	LC	10/02/2017	QC406 SW 100217	Field D	NSW 0908 PFAS	0.1	4.55	1.38	5.93	0.11	0.14	0.12	<0.0500	<0.200	0.32	0.48	0.08	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.0500	<0.0500	<0.0500	<0.1200	<0.0500	<0.1200	<0.0500	<0.1200		
SW108	LC	10/02/2017	QC505 SW 100217	Interlab D	NSW 0908 PFAS	-	-	-	3.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW108	LC	17/02/2017	LC SW 17022017	Normal	NSW 0908 PFAS	0.11	6.28	1.4	7.68	0.12	0.12	0.09	<0.0200	<0.100	0.16	0.56	0.06	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	24/02/2017	LC SW 240217	Normal	NSW 0908 PFAS	0.09	3.23	1.2	4.43	0.1	0.1	0.06	<0.0200	<0.100	0.16	0.49	0.03	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	3/03/2017	LC SW 030317	Normal	NSW 0908 PFAS	0.07	2.8	0.9	3.7	<0.0200	0.06	0.05	<0.0200	<0.100	0.15	0.46	0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.0500	<0.0500	<0.0500	<0.0500	<0.0200	<0.0500	<0.0200	<0.0500	<0.0200	
SW108	LC	10/03/2017	LC SW 100317	Normal	NSW 0908 PFAS	0.08	4.01	0.89	4.9	0.05	0.07	0.05	&																					





					PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID							
SD001	MD1	18/06/2014	MD1 SEDIMENT	Normal	NSW 0908 PFAS	<0.00500	<0.00500	-	-	<0.00500	-	-
SD001	MD1	13/01/2016	MD1 SD 13012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD001	MD1	14/12/2016	MD1 SED 20161214	Normal	NSW 0908 PFAS	0.0036	<0.00500	0.0003	<0.00500	<0.00500	<0.00500	0.103
SD001	MD1	14/12/2016	QC601 20161214	Field D	NSW 0908 PFAS	0.0045	<0.00500	0.0005	<0.00500	<0.00500	<0.00500	0.133
SD001	MD1	14/12/2016	QC701 20161214	Interlab D	NSW 0908 PFAS	-	-	-	-	-	-	-
SD001	MD1	12/04/2018	MD1 SED 12042018	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00500	<0.00500	0.0024
SD001	MD1	6/12/2018	0908 MD1 SD 181206	Normal	NSW 0908 PFAS	0.0182	<0.00500	<0.00200	<0.00500	<0.00500	0.0004	0.184
SD001	MD1	14/06/2019	0908 MD1 SD 190614	Normal	NSW 0908 PFAS	0.0014	<0.00500	<0.00200	<0.00500	<0.00500	<0.00500	0.165
SD001	MD1	5/11/2019	0908 MD1 SD 191105	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00500	<0.00500	0.108
SD001	MD1	2/06/2020	0908 SD001 200602	Normal	NSW 0908 PFASOMP	<0.001000	<0.002500	<0.001000	<0.002500	<0.001000	<0.002500	0.0257
SD001	MD1	20/11/2020	0908 QC103 201120	Field D	NSW 0908 PFASOMP	0.0003	<0.00500	<0.00200	<0.00500	<0.00500	<0.00200	0.0478
SD001	MD1	20/11/2020	0908 QC203 201120	Interlab D	NSW 0908 PFASOMP	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00200	-
SD001	MD1	20/11/2020	0908 SD001 201120	Normal	NSW 0908 PFASOMP	0.0003	<0.00500	<0.00200	<0.00500	<0.00500	<0.00200	0.0471
SD001	MD1	11/05/2021	0908 SD001 210511	Normal	NSW 0908 PFASOMP	0.001	<0.00500	<0.00200	<0.00500	<0.00500	<0.00200	0.0916
SD001	MD1	19/11/2021	0908 QC115 211119	Field D	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00500	<0.00200	0.0214
SD001	MD1	19/11/2021	0908 QC215 211119	Interlab D	NSW 0908 PFASOMP	<0.00100	<0.00100	<0.00200	<0.00100	<0.00100	<0.00200	0.013
SD001	MD1	19/11/2021	0908 SD001 211119	Normal	NSW 0908 PFASOMP	0.0002	<0.00500	<0.00200	<0.00500	<0.00500	<0.00200	0.026
SD005	MD5	19/06/2014	MD5 SEDIMENT	Normal	NSW 0908 PFAS	<0.00500	<0.00500	-	-	<0.00500	-	-
SD005	MD5	25/01/2016	MD5 SD 25012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD005	MD5	20/12/2016	MD5 SED 161220	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0102
SD005	MD5	12/04/2018	MD5 SED 12042018	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0016
SD005	MD5	6/12/2018	0908 MD5 SD 181206	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0026
SD005	MD5	13/06/2019	0908 MD5 SD 190613	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200
SD005	MD5	6/11/2019	0908 MD5 SD 191106	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0008
SD005	MD5	4/06/2020	0908 SD005 200604	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0038
SD005	MD5	20/11/2020	0908 SD005 201120	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.038
SD005	MD5	11/05/2021	0908 SD005 210511	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0113
SD005	MD5	17/11/2021	0908 SD005 211117	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0137
SD006	MD6	23/06/2014	MD6 SEDIMENT	Normal	NSW 0908 PFAS	<0.00500	<0.00500	-	-	<0.00500	-	-
SD006	MD6	13/01/2016	MD6 SD 13012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD006	MD6	14/12/2016	MD6 SED 20161214	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.026
SD006	MD6	12/04/2018	MD6 SED 12042018	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.023
SD006	MD6	6/12/2018	0908 MD6 SD 181206	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0186
SD006	MD6	14/06/2019	0908 MD6 SD 190614	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0769
SD006	MD6	5/11/2019	0908 MD6 SD 191105	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0018
SD006	MD6	2/06/2020	0908 SD006 200602	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.103
SD006	MD6	20/11/2020	0908 SD006 201120	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.008
SD006	MD6	11/05/2021	0908 SD006 210511	Normal	NSW 0908 PFASOMP	0.0038	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	1.28
SD006	MD6	17/11/2021	0908 SD006 211117	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.14
SD007	MD7	13/01/2016	MD7 SD 13012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD007	MD7	14/12/2016	MD7 SED 20161214	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0013
SD007	MD7	12/04/2018	MD7 SED 12042018	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0035
SD007	MD7	12/04/2018	QC100 SED 12042018	Field D	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0023
SD007	MD7	12/04/2018	QC200 SED 12042018	Interlab D	NSW 0908 PFAS	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00200	-
SD007	MD7	6/12/2018	0908 MD7 SD 181206	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0257
SD007	MD7	14/06/2019	0908 MD7 SD 190614	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0112
SD007	MD7	5/11/2019	0908 MD7 SD 191105	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0259
SD007	MD7	2/06/2020	0908 SD007 200602	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0072
SD007	MD7	20/11/2020	0908 SD007 201120	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0161
SD007	MD7	11/05/2021	0908 SD007 210511	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0073
SD007	MD7	16/11/2021	0908 SD007 211116	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0487
SD009	MD8	28/01/2016	MD8 SD 28012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD009	MD8	14/12/2016	MD8 SED 20161214	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.103
SD009	MD8	1/05/2018	MD8 SED 01052018	Normal	NSW 0908 PFAS	0.0009	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0867
SD009	MD8	7/12/2018	0908 MD8 SD 181207	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.001
SD009	MD8	13/06/2019	0908 MD8 SD 190613	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0018
SD009	MD8	6/11/2019	0908 MD8 SD 191106	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0062
SD009	MD8	24/06/2020	0908 SD009 200624	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0054
SD009	MD8	26/11/2020	0908 SD009 201126	Normal	NSW 0908 PFASOMP	0.0002	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0598
SD009	MD8	11/05/2021	0908 SD009 210511	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0259
SD009	MD8	17/11/2021	0908 SD009 211117	Normal	NSW 0908 PFASOMP	0.0002	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0188
SD011	MD10	12/02/2016	MD10 SD 12022016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD011	MD10	12/02/2016	QC103 SED 12022016	Field D	NSW 0908 PFAS	-	-	-	-	-	-	-
SD011	MD10	13/02/2017	MD10 SED 130217	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0033
SD011	MD10	7/12/2018	0908 MD10 SD 181207	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0187
SD011	MD10	13/06/2019	0908 MD10 SD 190613	Normal	NSW 0908 PFAS	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.009
SD011	MD10	6/11/2019	0908 MD10 SD 191106	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0069
SD011	MD10	19/06/2020	0908 SD011 200619	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0396
SD011	MD10	26/11/2020	0908 QC107 201126	Field D	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0695
SD011	MD10	26/11/2020	0908 QC207 201126	Interlab D	NSW 0908 PFASOMP	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00200	-
SD011	MD10	26/11/2020	0908 SD011 201126	Normal	NSW 0908 PFASOMP	0.0094	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.16
SD011	MD10	26/05/2021	0908 SD011 110526	Normal	NSW 0908 PFASOMP	<0.00200	<0.00500	<0.00200	<0.00500	<0.00200	<0.00500	0.0224
SD014	MD14	20/12/2016	MD14 SED 161220	Normal	NSW 0908 PFAS	<0.00200	<0.					





										PFAS - Perfluoroalkyl Sulfonamides							
										Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS
										mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR										0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID												
SD014	MD14	11/05/2021	0908 SD014 210511	Normal	NSW 0908 PFASOMP	0.0005	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0787				
SD014	MD14	17/11/2021	0908 QC212 211117	Intertab D	NSW 0908 PFASOMP	<0.001000	<0.001000	<0.000200	<0.001000	<0.001000	<0.000200	<0.000500	0.068				
SD014	MD14	17/11/2021	0908 SD014 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.102				
SD019	TC12	30/01/2017	TC12 SED 300117	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0273				
SD019	TC12	12/04/2018	TC12 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0035				
SD019	TC12	6/12/2018	0908 TC12 SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	<0.000200				
SD019	TC12	14/06/2019	0908 TC12 SD 190614	Normal	NSW 0908 PFAS	<0.000200	<0.000600	<0.000200	<0.000600	<0.000600	<0.000200	<0.000600	0.0224				
SD019	TC12	7/11/2019	0908 TC12 SD 191107	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0006				
SD019	TC12	26/05/2020	0908 SD019 200526	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0048				
SD019	TC12	12/11/2020	0908 SD019 201112	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.015				
SD019	TC12	10/05/2021	0908 SD019 210510	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.134				
SD019	TC12	12/11/2021	0908 SD019 211112	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0053				
SD023	TC6A	6/12/2018	0908 TC6A SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0012				
SD023	TC6A	5/11/2019	0908 TC6A SD 191105	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0065				
SD023	TC6A	4/06/2020	0908 SD023 200604	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0116				
SD023	TC6A	20/11/2020	0908 SD023 201120	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0043				
SD023	TC6A	11/05/2021	0908 SD023 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0179				
SD023	TC6A	17/11/2021	0908 QC113 211117	Field D	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.001				
SD023	TC6A	17/11/2021	0908 SD023 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0002				
SD024	TC7	21/01/2016	TC7 SED 21012016	Normal	NSW 0908 PFAS	<0.000200	<0.001000	-	<0.001000	<0.001000	-	<0.001000	-				
SD024	TC7	14/12/2016	TC7 SED 20161214	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0011				
SD024	TC7	6/12/2018	0908 TC7 SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0033				
SD024	TC7	13/06/2019	0908 TC7 SD 190613	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0025				
SD024	TC7	5/11/2019	0908 TC7 SD 191105	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.002				
SD024	TC7	4/06/2020	0908 SD024 200604	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0119				
SD024	TC7	20/11/2020	0908 SD024 201120	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0184				
SD024	TC7	11/05/2021	0908 SD024 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0501				
SD024	TC7	17/11/2021	0908 QC213 211117	Intertab D	NSW 0908 PFASOMP	<0.001000	<0.001000	<0.000200	<0.001000	<0.001000	<0.000200	<0.000500	0.0032				
SD024	TC7	17/11/2021	0908 SD024 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0039				
SD047	BD03	17/11/2014	BD03 SD01 171114	Normal	NSW 0908 PFAS	0.007	<0.005000	-	<0.005000	-	-	-	-				
SD047	BD03	17/11/2014	QC100 171114	Field D	NSW 0908 PFAS	0.011	<0.005000	-	<0.005000	-	-	-	-				
SD047	BD03	14/01/2016	BD03 SD 14012016	Normal	NSW 0908 PFAS	0.0007	<0.001000	-	<0.001000	<0.001000	-	<0.001000	-				
SD047	BD03	14/09/2016	BD03 0.0-0.1 140916	Normal	NSW 0908 PFAS	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	-				
SD047	BD03	14/09/2016	BD03 0.3-0.4 140916	Normal	NSW 0908 PFAS	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	-				
SD047	BD03	16/12/2016	BD03 SED 161216	Normal	NSW 0908 PFAS	0.0009	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0364				
SD047	BD03	12/04/2018	BD03 SED 13042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0039				
SD047	BD03	7/12/2018	0908 BD03 SD 181207	Normal	NSW 0908 PFAS	0.0017	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0257				
SD047	BD03	14/06/2019	0908 BD03 SD 190614	Normal	NSW 0908 PFAS	0.0014	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0527				
SD047	BD03	6/11/2019	0908 BD04 SD 191106	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0014				
SD047	BD03	22/05/2020	0908 SD047 200522	Normal	NSW 0908 PFASOMP	0.0097	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.162				
SD047	BD03	27/11/2020	0908 SD047 201127	Normal	NSW 0908 PFASOMP	0.0062	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0798				
SD047	BD03	11/05/2021	0908 SD047 210511	Normal	NSW 0908 PFASOMP	0.0026	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0561				
SD047	BD03	16/11/2021	0908 SD047 211116	Normal	NSW 0908 PFASOMP	0.009	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.408				
SD048	BD04	17/11/2014	BD04 SD01 171114	Normal	NSW 0908 PFAS	<0.000500	<0.000500	-	<0.000500	-	-	-	-				
SD048	BD04	20/01/2016	BD04 SD 20012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-	-				
SD048	BD04	16/12/2016	BD04 SED 161216	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0013				
SD048	BD04	12/04/2018	BD04 SED 13042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0009				
SD048	BD04	7/12/2018	0908 BD04 SD 181207	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0008				
SD048	BD04	14/06/2019	0908 BD04 SD 190614	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0053				
SD048	BD04	22/05/2020	0908 SD048 200522	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0036				
SD048	BD04	27/11/2020	0908 SD048 201127	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0018				
SD048	BD04	11/05/2021	0908 SD048 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0008				
SD048	BD04	16/11/2021	0908 SD048 211116	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0067				
SD055	DD1	23/06/2014	DD1 SEDIMENT	Normal	NSW 0908 PFAS	<0.000500	<0.000500	-	<0.000500	-	-	-	-				
SD055	DD1	26/06/2014	QC6 SEDIMENT	Intertab D	NSW 0908 PFAS	<0.000200	<0.001000	-	<0.001000	<0.001000	-	<0.001000	-				
SD055	DD1	14/01/2016	DD1 SD 14012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-	-				
SD055	DD1	16/12/2016	DD1 SED 161216	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.007				
SD055	DD1	12/04/2018	DD1 SED 13042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0018				
SD055	DD1	7/12/2018	0908 DD1 SD 181207	Normal	NSW 0908 PFAS	0.0008	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0136				
SD055	DD1	13/06/2019	0908 DD1 SD 190613	Normal	NSW 0908 PFAS	0.0021	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0055				
SD055	DD1	5/11/2019	0908 DD1 SD 191105	Normal	NSW 0908 PFASOMP	0.0004	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0018				
SD055	DD1	22/05/2020	0908 SD055 200522	Normal	NSW 0908 PFASOMP	0.0009	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0115				
SD055	DD1	23/11/2020	0908 SD055 201123	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0028				
SD055	DD1	27/04/2021	0908 SD055 21														



		PFAS - Perfluoroalkyl Sulfonamides										
		Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS			
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			
LOR		0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001			
Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID							
SD060	DD3	14/12/2016	DD3 SED 161214	Normal	NSW 0908 PFAS	<0.000200	<0.000600	<0.000200	<0.000600	<0.000200	<0.000600	0.395
SD060	DD3	12/04/2018	DD3 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.13
SD060	DD3	6/12/2018	0908 DD3 SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.239
SD060	DD3	13/06/2019	0908 DD3 SD 190613	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.021
SD060	DD3	5/11/2019	0908 DD3 SD 191105	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.12
SD060	DD3	4/06/2020	0908 SD060 200604	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0271
SD060	DD3	20/11/2020	0908 SD060 201120	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0273
SD060	DD3	11/05/2021	0908 SD060 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0452
SD060	DD3	15/11/2021	0908 SD060 211115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.126
SD062	DD5	17/06/2014	DD5 SEDIMENT	Normal	NSW 0908 PFAS	<0.000500	<0.000500	-	-	<0.000500	-	-
SD062	DD5	13/01/2016	DD5 SD 13012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD062	DD5	14/12/2016	DD5 SED 161214	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0012
SD062	DD5	12/04/2018	DD5 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0084
SD062	DD5	7/12/2018	0908 DD5 SD 181207	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0094
SD062	DD5	7/12/2018	0908 QC110 SD 181207	Field D	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.007
SD062	DD5	7/12/2018	0908 QC205 SD 181207	Interlab D	NSW 0908 PFAS	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00500	-
SD062	DD5	13/06/2019	0908 DD5 SD 190613	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0321
SD062	DD5	6/11/2019	0908 DD5 SD 191106	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.006
SD062	DD5	2/06/2020	0908 SD062 200602	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0888
SD062	DD5	20/11/2020	0908 SD062 201120	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0035
SD062	DD5	11/05/2021	0908 SD062 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0343
SD062	DD5	17/11/2021	0908 SD062 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0039
SD072	FFD4	6/12/2018	0908 FFD4 SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0077
SD072	FFD4	25/05/2020	0908 SD072 200525	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.153
SD079	TC2	14/01/2016	TC2 SD 14012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD079	TC2	14/12/2016	TC2 SED 161214	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0008
SD079	TC2	12/04/2018	TC2 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0093
SD079	TC2	6/12/2018	0908 TC2 SD 181206	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0013
SD079	TC2	13/06/2019	0908 TC2 SD 190613	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.007
SD079	TC2	5/11/2019	0908 TC2 SD 191105	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0021
SD079	TC2	2/06/2020	0908 SD079 200602	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0652
SD079	TC2	26/11/2020	0908 SD079 201126	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0338
SD079	TC2	11/05/2021	0908 SD079 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0114
SD079	TC2	12/11/2021	0908 SD079 211112	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0182
SD081	TFD1	13/01/2016	TFD1 SD 13012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD081	TFD1	14/12/2016	TFD1 SED 161214	Normal	NSW 0908 PFAS	<0.000500	<0.001200	<0.000500	<0.001200	<0.000500	<0.001200	0.0145
SD081	TFD1	12/04/2018	TFD1 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0025
SD081	TFD1	7/12/2018	0908 TFD1 SD 181206	Normal	NSW 0908 PFAS	<0.000500	<0.001200	<0.000500	<0.001200	<0.000500	<0.001200	0.0271
SD081	TFD1	14/06/2019	0908 TFD1 SD 190614	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0208
SD081	TFD1	5/11/2019	0908 QC102 191105	Field D	NSW 0908 PFASOMP	<0.000500	<0.001200	<0.000500	<0.001200	<0.000500	<0.001200	0.0196
SD081	TFD1	5/11/2019	0908 QC202 191105	Interlab D	NSW 0908 PFASOMP	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	-
SD081	TFD1	5/11/2019	0908 TFD1 SD 191105	Normal	NSW 0908 PFASOMP	<0.000500	<0.001200	<0.000500	<0.001200	<0.000500	<0.001200	0.02
SD081	TFD1	2/06/2020	0908 SD081 200602	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0474
SD081	TFD1	12/11/2020	0908 SD081 201112	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0134
SD081	TFD1	11/05/2021	0908 SD081 210511	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0041
SD081	TFD1	17/11/2021	0908 SD081 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0062
SD082	TFD2	25/01/2016	TFD2 SD 25012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD082	TFD2	19/12/2016	TFD2 SED 161219	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200
SD082	TFD2	12/04/2018	TFD2 SED 12042018	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0116
SD082	TFD2	7/12/2018	0908 TFD2 SD 181207	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0113
SD082	TFD2	14/06/2019	0908 TFD2 SD 190614	Normal	NSW 0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0144
SD082	TFD2	7/11/2019	0908 TFD2 SD 191107	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0049
SD082	TFD2	25/05/2020	0908 SD082 200525	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0734
SD082	TFD2	27/11/2020	0908 SD082 201127	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0371
SD082	TFD2	20/04/2021	0908 QC206 210520	Interlab D	NSW 0908 PFASOMP	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00500	-
SD082	TFD2	20/05/2021	0908 QC106 210520	Field D	NSW 0908 PFASOMP	0.0003	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0485
SD082	TFD2	20/05/2021	0908 SD082 210520	Normal	NSW 0908 PFASOMP	0.0004	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0475
SD082	TFD2	19/11/2021	0908 SD082 211119	Normal	NSW 0908 PFASOMP	0.0002	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0291
SD108	LC	23/06/2014	LC1 SEDIMENT	Normal	NSW 0908 PFAS	<0.000500	<0.000500	-	-	<0.000500	-	-
SD108	LC	14/01/2016	LC SD 14012016	Normal	NSW 0908 PFAS	-	-	-	-	-	-	-
SD108	LC	14/09/2016	LC 0.0-0.1 140916	Normal	NSW 0908 PFAS	0.0011	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	-
SD108	LC	16/12/2016	LC SED 161216	Normal	NSW 0908 PFAS	0.0025	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0471
SD108	LC	12/04/2018	LC SED 13042018	Normal	NSW 0908 PFAS	0.0016	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0255
SD108	LC	7/12/2018	0908 LC SD 181207	Normal	NSW 0908 PFAS	0.0022	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0384
SD108	LC	14/06/2019	0908 LC SD 190614	Normal	NSW 0908 PFAS	0.0016	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0212
SD108	LC	6/11/2019	0908 BD03 SD 191106	Normal	NSW 0908 PFASOMP	0.001	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0449
SD108	LC	6/11/2019	0908 LC SD 191106	Normal	NSW 0908 PFASOMP	0.0096	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0692
SD108	LC	22/05/2020	0908 SD108 200522	Normal	NSW 0908 PFASOMP	0.0052	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.0479
SD108	LC	27/11/2020	0908 SD108 201127	Normal	NSW 0908 PFASOMP	0.005	<0.000500	<0.000200	<0.000500	<0.000200	<0.000500	0.255
SD108	LC	11/05/2021	0									



	PFAS - Perfluoroalkyl Sulfonamides							Sum of PFAS
	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
LOR	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID								
SD110	LC_B	16/11/2021	0908 SD110 211116	Normal	NSW_0908 PFASOMP	0.0498	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.259
SD254	FC1A	7/12/2018	0908 FC1A SD 181207	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0089
SD254	FC1A	14/06/2019	0908 FC1A SD 190614	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0041
SD254	FC1A	8/11/2019	0908 FC1A SD 191108	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0042
SD254	FC1A	12/06/2020	0908 QC111 200612	Field_D	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0422
SD254	FC1A	12/06/2020	0908 QC211 200612	Interlab_D	NSW_0908 PFASOMP	<0.001000	<0.002000	<0.002000	<0.005000	<0.002000	<0.002000	<0.005000	-
SD254	FC1A	12/06/2020	0908 SD254 200612	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.05
SD254	FC1A	13/11/2020	0908 SD254 201113	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0482
SD254	FC1A	10/05/2021	0908 SD254 210510	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0385
SD254	FC1A	26/11/2021	0908 SD254 211126	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0494
SD255	FC1B	7/12/2018	0908 FC1B SD 181207	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0145
SD255	FC1B	14/06/2019	0908 FC1B SD 190614	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0028
SD255	FC1B	8/11/2019	0908 FC1B SD 191108	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0103
SD255	FC1B	12/06/2020	0908 SD255 200612	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0127
SD255	FC1B	13/11/2020	0908 SD255 201113	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0134
SD255	FC1B	10/05/2021	0908 SD255 210510	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0522
SD255	FC1B	26/11/2021	0908 SD255 211126	Normal	NSW_0908 PFASOMP	0.0003	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0164
SD259	FCD4	21/02/2017	FCD4_SED 17022017	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0175
SD259	FCD4	12/04/2018	FCD4_SED 13042018	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0052
SD259	FCD4	7/12/2018	0908 FCD4 SD 181207	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0019
SD259	FCD4	14/06/2019	0908 FCD4 SD 190614	Normal	NSW_0908 PFAS	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0012
SD259	FCD4	8/11/2019	0908 FCD4 SD 191108	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0025
SD259	FCD4	25/05/2020	0908 SD259 200525	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0097
SD259	FCD4	13/11/2020	0908 SD259 201113	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0149
SD259	FCD4	10/05/2021	0908 SD259 210510	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0361
SD259	FCD4	26/11/2021	0908 SD259 211126	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.001
SD326	FC1C	8/11/2019	0908 FC1C SD 191108	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0013
SD326	FC1C	12/06/2020	0908 SD326 200612	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0097
SD326	FC1C	13/11/2020	0908 SD326 201113	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0063
SD326	FC1C	10/05/2021	0908 SD326 210510	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0319
SD326	FC1C	26/11/2021	0908 SD326 211126	Normal	NSW_0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0143

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample

Table T12 - Historical Surface Soil Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS - Perfluoroalkyl Sulfonic Acids								PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids					
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDa)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0002	0.0002	
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)						0.1		0.007																			
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)						20		2																			
PFAS NEMP 2020 Public open space (HIL C)						10		1																			
PFAS NEMP 2020 Industrial/ commercial (HIL D)						50		20																			
PFAS NEMP 2020 Ecological direct exposure						10		1																			
PFAS NEMP 2020 Ecological indirect exposure							0.01																				

Notes  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample



Table T12 - Historical Surface Soil Analytical Results

	PFAS - Perfluoroalkyl Sulfonamides							Sum of PFAS
	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005	0.0001
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)								
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)								
PFAS NEMP 2020 Public open space (HIL C)								
PFAS NEMP 2020 Industrial/ commercial (HIL D)								
PFAS NEMP 2020 Ecological direct exposure								
PFAS NEMP 2020 Ecological indirect exposure								

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS
SS101	SS001, SS01	15/11/2019	0908 SS101 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0381
SS101	SS001, SS01	19/06/2020	0908 SS001 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0032
SS101	SS001, SS01	26/11/2020	0908 SS101 201126	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0164
SS101	SS001, SS01	12/05/2021	0908 SS101 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0064
SS101	SS001, SS01	17/11/2021	0908 SS101 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0044
SS102	SS002, SS02	15/11/2019	0908 SS102 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0236
SS102	SS002, SS02	19/06/2020	0908 SS002 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0034
SS102	SS002, SS02	26/11/2020	0908 QC111 201126	Field_D	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0229
SS102	SS002, SS02	26/11/2020	0908 QC211 201126	Interlab_D	NSW 0908 PFASOMP	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00200	<0.00500	-
SS102	SS002, SS02	26/11/2020	0908 SS102 201126	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0211
SS102	SS002, SS02	12/05/2021	0908 SS102 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0101
SS102	SS002, SS02	17/11/2021	0908 SS102 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0031
SS103	SS003, SS03	15/11/2019	0908 SS103 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0024
SS103	SS003, SS03	19/06/2020	0908 SS003 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0142
SS103	SS003, SS03	1/12/2020	0908 SS103 201201	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0056
SS103	SS003, SS03	12/05/2021	0908 SS103 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0027
SS103	SS003, SS03	19/11/2021	0908 SS103 211119	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0015
SS104	SS004, SS04	15/11/2019	0908 SS104 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0006
SS104	SS004, SS04	19/06/2020	0908 SS004 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0008
SS104	SS004, SS04	1/12/2020	0908 SS104 201201	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	<0.000200
SS104	SS004, SS04	12/05/2021	0908 SS104 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0002
SS104	SS004, SS04	19/11/2021	0908 QC214 211119	Interlab_D	NSW 0908 PFASOMP	<0.00100	<0.00100	<0.00200	<0.00100	<0.00100	<0.00200	<0.00100	0.0009
SS104	SS004, SS04	19/11/2021	0908 SS104 211119	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0008
SS105	SS005, SS05	15/11/2019	0908 QC106 191115	Field_D	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	<0.000200
SS105	SS005, SS05	15/11/2019	0908 QC206 191115	Interlab_D	NSW 0908 PFASOMP	<0.00100	<0.00200	<0.00200	<0.00500	<0.00200	<0.00200	<0.00500	-
SS105	SS005, SS05	15/11/2019	0908 SS105 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	<0.000200
SS105	SS005, SS05	19/06/2020	0908 SS005 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0003
SS105	SS005, SS05	1/12/2020	0908 SS105 201201	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0005
SS105	SS005, SS05	12/05/2021	0908 SS105 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0028
SS105	SS005, SS05	17/11/2021	0908 SS105 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0004
SS106	SS006, SS06	15/11/2019	0908 SS106 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0161
SS106	SS006, SS06	19/06/2020	0908 SS006 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0066
SS106	SS006, SS06	1/12/2020	0908 SS106 201201	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.002
SS106	SS006, SS06	12/05/2021	0908 SS106 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0011
SS106	SS006, SS06	15/11/2021	0908 SS106 211115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.003
SS107	SS007, SS07	15/11/2019	0908 SS107 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0003
SS107	SS007, SS07	19/06/2020	0908 SS007 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0078
SS107	SS007, SS07	13/11/2020	0908 SS107 201113	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0006
SS107	SS007, SS07	12/05/2021	0908 SS107 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0004
SS107	SS007, SS07	15/11/2021	0908 SS107 211115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0064
SS108	SS008, SS08	15/11/2019	0908 SS108 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0009
SS108	SS008, SS08	19/06/2020	0908 SS008 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.001
SS108	SS008, SS08	13/11/2020	0908 SS108 201113	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0025
SS108	SS008, SS08	12/05/2021	0908 SS108 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0017
SS108	SS008, SS08	15/11/2021	0908 SS108 211115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0027
SS109	SS009, SS09	15/11/2019	0908 SS109 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	<0.000200
SS109	SS009, SS09	19/06/2020	0908 SS009 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0006
SS109	SS009, SS09	1/12/2020	0908 SS109 201201	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0005
SS109	SS009, SS09	12/05/2021	0908 SS109 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.002
SS109	SS009, SS09	15/11/2021	0908 SS109 211115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.002
SS110	SS010, SS10	15/11/2019	0908 SS110 191115	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0367
SS110	SS010, SS10	19/06/2020	0908 SS010 200619	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0086
SS110	SS010, SS10	20/11/2020	0908 SS110 201120	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.014
SS110	SS010, SS10	12/05/2021	0908 SS110 210512	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0036
SS110	SS010, SS10	17/11/2021	0908 QC112 211117	Field_D	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200	<0.000500	0.0035
SS110	SS010, SS10	17/11/2021	0908 SS110 211117	Normal	NSW 0908 PFASOMP	<0.000200	<0.000500	<0.000200	<0.000500	<0.000500	<0.000200</		

# Appendix C

## Calibration Certificates

## Appendix C Calibration Certificates

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	20G100643
<b>Client Name</b>	[REDACTED] (AECOM Australia)
<b>Project Number</b>	60612562 Task 2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	20.3	20.3	20.3	°C
pH	pH 4.00	351750	4.01	4.08	4.01	pH
pH	pH 7.00	351621	7.00	7.00	7.00	pH
Conductivity	2760 µS/cm at 25°C	362912	2760	2738	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	364644/363903	237.5	237.2	237.5	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	362832	0.0	-0.4	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	101.6	100.0	%

**Declaration**


**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	02/11/2021
<b>Calibration Due</b>	02/05/2022

0908

ANZ


**FQM - Water Quality Meter Calibration Record**

Project Name:	OMP		Project Number:	60612562	
Project Location:	Williamstown		Client:	Defence	
PM Name:	JB		Fieldwork Staff Name:	P.Y	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAMSCIENTIFIC				
Make and Model:	Professional Plus				
Serial Number:	200100643				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	<del>8/11/21</del> <del>12:01</del>				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	8/11/21 12:01				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2231413	0	
Bump Test Reading:	3.91	6.97	1420	0.20	
Bump Test Temperature:	22.8	22.7	22.3	22.6	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			8-11-21 _____ Date		
Distribution: Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1


Project Name:	OMP	Project Number:	60612562		
Project Location:	Williamstown	Client:	Defence		
PM Name:	JB	Fieldwork Staff Name:	P.Y		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAMSCIENTIFIC				
Make and Model:	Professional Plus				
Serial Number:	200100643				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	9-11-21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	1413	0	
Calibration Reading:	4.00	<del>6.7</del> 7.0	1413	0	
Calibration Temperature:	20.3	21.2	21.5	20.7	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	10-11-21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	<del>4</del>	<del>7</del>	<del>1413</del>	<del>0</del>	
Bump Test Reading:	4.1	7.2	1420	0.1	
Bump Test Temperature:	20.1	20.1	20.1	20.1	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			9-11-21 _____ Date		
Distribution: Project Central File					



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OHP	Project Number:	60612562
Project Location:	RAAF WLM	Client:	DEFENCE
PM Name:	[REDACTED]	Fieldwork Staff Name:	CM & SR
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.			
<b>INSTRUMENT DETAILS</b>			
Supplier:	WAM SCIENTIFIC		
Make and Model:	PRO PLUS		
Serial Number:	209100643		
<b>CALIBRATION</b>			
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>			
Date and Time:	11.11.21		
Parameter	Acidity		Conductivity
Units	pH	pH	µS/cm
Calibration Standard Concentration:	4	7	10
Calibration Reading:	4.01	7.03	9.98
Calibration Temperature:	21.5	21.5	21.5
			2760
			2798
			22
			22
<b>ONGOING CHECKS</b>			
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>			
Date and Time:	12.11.21 0810		
Parameter	Acidity		Conductivity
Units	pH	pH	µS/cm
Calibration Standard Concentration:	4	10	
Bump Test Reading:	4	9.94	
Bump Test Temperature:	19.1	19.3	
			1224
			1289
			13.3
<b>COMMENTS</b>			
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.			
<b>Approval and Distribution</b>			
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.			
 _____ Fieldwork Staff Signature		_____ 12-11-21 Date	
Distribution: Project Central File			

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PPAS ONP	Project Number:	60612562
Project Location:	RAAF WLM	Client:	DEFENCE
PM Name:		Fieldwork Staff Name:	C.M & J.R.

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	PRO PLUS
Serial Number:	209100643

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	15.11.21 - 11:25				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	10	1278	0.0	
Calibration Reading:	4.01	9.93	1280	0.0	
Calibration Temperature:	20.1	20.1	20.1	20.1	

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**


Date and Time:	16.11.21 - 1010				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	10	1305	0.0	
Bump Test Reading:	4.04	9.99	1332	0.0	
Bump Test Temperature:	18.4	18.5	21	21	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.


16-11-21

Fieldwork Staff Signature


Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	60612562		
Project Location:	WILLIAMTOWN	Client:	DEFENCE		
PM Name:	[REDACTED]	Fieldwork Staff Name:	CM & JR		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM SCIENTIFIC				
Make and Model:	PRO PLUS				
Serial Number:	209100643				
<b>CALIBRATION BUMP TEST</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	18-11-21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	10	1224	0
Calibration Reading:	4.02	7.00	10.3	1286	0
Calibration Temperature:	18	18	18	18	18
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	17-11-21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	10.0	1143	0	
Bump Test Reading:	3.99	10.1	1160	0.2	
Bump Test Temperature:	19	19	19	19	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<p style="text-align: center; opacity: 0.5; font-size: 2em;">PFA</p>					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			_____ 18-11-21 Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	60612562
Project Location:	Williamstown	Client:	Defence
PM Name:	GT	Fieldwork Staff Name:	CM JR

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM Scientific
Make and Model:	Hydrex Professional Plus
Serial Number:	209100693

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	19.11.21				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	1278	0	
Calibration Reading:	4.04	7.05	1282	0	
Calibration Temperature:	21.4	20.8	20.7	22.3	

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

19-11-21  
 \_\_\_\_\_  
 Date


Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	WLM OMP		Project Number:	60612562	
Project Location:	willamtown		Client:	Defence	
PM Name:	GT		Fieldwork Staff Name:	CM	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM Scientific				
Make and Model:	Professional Plus				
Serial Number:	2091 100 643				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	26.11.21 0714				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	4 pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	10	1713		
Calibration Reading:	4.01	9.97	1744		
Calibration Temperature:	23	23	23		
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 Fieldwork Staff Signature			26.11.21 Date		
Distribution: Project Central File					

# Appendix D

## Analytical Data Validation



## Appendix D Analytical Data Validation

<b>Project number:</b>	60612562	<b>Validation by:</b>	██████████	<b>Date:</b>	14/12/2021
<b>Client:</b>	Defence	<b>Data verified by:</b>	██████████	<b>Date:</b>	17/01/2022
<b>Site:</b>	RAAF Base Williamtown and Management Area		<b>Project Manager:</b>	██████████	
<b>Matrix type:</b>	Soil, Sediment, Surface Water and Groundwater				
<b>Primary Samples:</b>	12 Soil, 24 Sediment, 21 Surface Water and 95 Groundwater				
<b>Laboratory:</b>	ALS (Primary) and Envirolab (Secondary)				
<b>Lab reference:</b>	ES2143044, ES2143045, ES2143046, ES2143047, ES2143048, ES2143049, ES2143050, ES2143051, ES2143052, ES2143053, ES2143123, ES2143600, 284113 and 284113-A				
<b>Key Issues:</b>	No significant issues were identified that have the potential to impact upon the reliability of the data. AECOM considers that the field and laboratory QA/QC procedures were appropriate for the purposes of the investigation.				
<b>Field Quality Assurance and Quality Controls</b>					
Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2021).				
Sampling personnel	Sampling was conducted by ██████████ between 08/11/2021 and 30/11/2021. Field personnel were suitably qualified and experienced AECOM environmental scientists and engineers.				
Sampling Methodology	<p>Groundwater samples were collected using pre-deployed Hydrasleeve™ samplers or directly into laboratory supplied bottles for bore water accessed by tap. Sample bottles were filled to the top, following laboratory instructions, caps immediately applied and stored on ice for preservation. Water quality parameters were collected from the Hydrasleeve™ sampler or tap and recorded using a water quality meter once field values had stabilised.</p> <p>Surface water samples were collected from immediately below the water surface (approximately 10 cm below the surface water level, where depth permitted) to minimise collection of sediment, surface film or floating materials in the samples. Laboratory supplied bottles were lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p> <p>Sediment and soil samples were collected using a trowel or gloved hand and deposited directly into laboratory prepared containers. The containers were filled to the top, following laboratory instructions, and stored on ice for preservation.</p> <p>After each sample was collected, re-usable equipment was decontaminated using Liquinox and dedicated nitrile gloves were disposed of in waste bins.</p>				
Chain of Custody	All samples taken were recorded on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.				
Rinsate Blank Sampling	Rinsate blank samples were collected at a frequency of one per day of sampling where equipment was re-used and decontaminated between sample points.				

<p>Frequency of field QC</p>	<p>Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of one per ten primary samples (10%) in accordance with the DQOs. In total:</p> <ul style="list-style-type: none"> <li>• 12 water field duplicates and 12 water field triplicates were collected for 116 primary water samples</li> <li>• 4 soil field duplicates and 4 soil field triplicates were collected for 36 primary soil samples.</li> </ul>
<p>Handling and preservation</p>	<p>All samples were placed in a chilled cooler immediately after sampling until handed to the laboratory. Samples were received preserved and chilled at the primary and secondary laboratories, with most containers received within the recommended temperature range (<math>4 \pm 2^{\circ}\text{C}</math>), except for the following work order where the recorded temperature was above the recommended range:</p> <ul style="list-style-type: none"> <li>• ES2143600 (<math>8.9^{\circ}\text{C}</math>)</li> <li>• 284113 (<math>12^{\circ}\text{C}</math>)</li> </ul> <p>As the samples in this batch were analysed only for PFAS, the elevated temperature is not expected to impact the overall data quality and interpretation of its results.</p> <p>All samples were received at the laboratory in appropriate sample containers.</p>
<p>Calibration of equipment</p>	<p>Measurements of water geochemical parameters were undertaken using the YSI WQM Professional Plus, which was calibrated by the supplier prior to use, in accordance with manufacturer's instructions and daily by the field personnel. Measurement of depth to groundwater was undertaken using an interface probe, which was serviced by the supplier prior to use.</p> <p>The equipment calibration and service certificates are presented in <b>Appendix C</b>.</p>
<p><b>Laboratory Quality Assurance and Quality Controls</b></p>	
<p>Tests requested/reported</p>	<p>All primary samples were analysed for the PFAS extended suite. All samples and requested analyses were documented in the chain of custody (COC) and any subsequent email amendments.</p>
<p>Holding time compliance</p>	<p>Samples were extracted and analysed within recommended holding times.</p> <p>As moisture content is not a contaminant and not assessed, there is no impact to the interpretation of results.</p>
<p>Laboratory</p>	<p>The primary laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney), a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825). The secondary sample analysis was conducted at the Envirolab Services Pty Ltd (Envirolab, Sydney), also a NATA accredited laboratory (accreditation number 2901).</p>

Frequency of laboratory QC	<p>The laboratory reported a sufficient frequency of quality control samples to assess whether the results had been reported to an acceptable accuracy and precision, except for the following laboratory certificates which reported quality control frequency outliers:</p> <p><b>Laboratory Duplicates (DUP) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS:</b></p> <ul style="list-style-type: none"> <li>• ES2143044 – 7.28, below the expected 10.0</li> <li>• ES2143045 – 0.0, below the expected 10.0</li> <li>• ES2143123 – 5.26, below the expected 10.0</li> </ul> <p><b>Laboratory Duplicates (DUP) Moisture Content:</b></p> <ul style="list-style-type: none"> <li>• ES2143053 – 9.38, below the expected 10.0</li> </ul> <p><b>Matrix Spikes (MS) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS:</b></p> <ul style="list-style-type: none"> <li>• ES2143044 – 3.97, below the expected 5.0</li> <li>• ES2143045 – 0.0, below the expected 5.0</li> <li>• ES2143123 – 2.63, below the expected 5.0</li> </ul> <p>The precision and accuracy of the data can be assessed as acceptable based on method blanks, laboratory control spike and surrogate spike recoveries, which were reported at the required frequencies and within control limits and available laboratory duplicates and matrix spikes for the same analytical group which were reported within control limits.</p>
Method Blank (MB)	<p>All method blank concentrations were reported &lt;LOR for the analytes tested. This is presented in the Quality Control Reports for both laboratories.</p>
Laboratory Duplicate (LD) Relative Percent Difference (RPD)	<p>The reported laboratory duplicate's Relative Percentage Differences (RPDs) were within laboratories control limits. The laboratory duplicate RPDs are presented in the Quality Control Reports for both laboratories.</p>
Laboratory Control Spike (LCS) recovery	<p>Laboratory control spike (LCS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.</p>
Matrix Spike (MS) recovery	<p>Matrix spike (MS) recoveries mostly met the DQI, except for the following:</p> <p><b>Non-determined MS recoveries for Perfluorooctane sulfonic acid (PFOS):</b></p> <ul style="list-style-type: none"> <li>• 0908_MW175D_211116 – ES2143044</li> <li>• Anonymous soil sample from non-AECOM batch – reported for ES2143123</li> <li>• Anonymous water sample from non-AECOM batch – reported for ES2143046 and ES2143123</li> </ul> <p><b>Non-determined MS recoveries for Perfluorohexane sulfonic acid (PFHxS):</b></p> <ul style="list-style-type: none"> <li>• Anonymous water sample from non-AECOM batch – reported for ES2143046 and ES2143123</li> </ul> <p>These non-determinations, due to background levels being greater than or equal to four times spike levels, do not reflect method bias or affect data interpretation.</p>
Surrogate spike (SS) recovery	<p>The reported surrogate spike recoveries were within laboratory control limits. This is presented in the Quality Control Reports for both laboratories.</p>

Quality Assurance and Quality Controls Data Evaluation	
Comparison of Esdat data and laboratory results	No anomalous results between Esdat output data and laboratory analytical results were noted.
Data transcription	The laboratory results within the electronic data, the laboratory reports, and tables generated by AECOM were checked, with no anomalies identified.
Limits of reporting	With the exception of the 99% ecosystem protection values for PFOS, the Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted screening levels. As per the SAQP (AECOM, 2021), the laboratory LOR was adopted for screening purposes at locations where PFOS was analysed at the standard LOR.
Rinsate Blank Sample Results	The results of the Rinsate Blank sample analysis ( <b>Table D3</b> ) indicated that concentrations of PFAS were below the laboratory limits of reporting (LORs) for all analytes tested, indicating decontamination procedures were adequate.
Field duplicate and RPDs	<p>Field duplicate RPDs were reported within the acceptable range (0%-30%), with the exception for:</p> <p><b>MW178/QC107</b></p> <ul style="list-style-type: none"> <li>Perfluorooctane sulfonic acid (PFOS): 40%</li> </ul> <p><b>SW001/QC114</b></p> <ul style="list-style-type: none"> <li>Perfluorobutane sulfonic acid (PFBS): 33%</li> </ul> <p><b>SW023/QC110</b></p> <ul style="list-style-type: none"> <li>Perfluorobutane sulfonic acid (PFBS): 40%</li> </ul> <p><b>SD001/QC115</b></p> <ul style="list-style-type: none"> <li>Perfluorooctane sulfonic acid (PFOS): 40%</li> <li>Perfluorotridecanoic acid (PFTrDA): 127%</li> <li>Perfluorohexanoic acid (PFHxA): 86%</li> <li>Perfluoroheptane sulfonic acid (PFHpS): 40%</li> </ul> <p><b>SD023/QC113</b></p> <ul style="list-style-type: none"> <li>Perfluorohexane sulfonic acid (PFHxS): 67%</li> <li>Sum of PFHxS and PFOS: 67%</li> <li>Sum of PFAS: 67%</li> </ul> <p>These RPDs outside the 30% acceptable range can be considered acceptable, in line with the DQIs, as the results are less than 10 times the LOR (no limit for acceptable range) or are less than 20 times the LOR (and the RPD is less than 50%). Water and Soil RPD results are provided in Table D1 and Table D2.</p>

Field triplicate RPDs

Field triplicate RPDs were reported mostly within acceptable range (0%-30%), except for:

**MW134I/QC209**

- Perfluorooctane sulfonic acid (PFOS): 67%

**MW108S/QC203**

- Perfluorooctanoic Acid (PFOA): 67%
- Perfluoroheptane sulfonic acid (PFHpS): 67%
- Perfluorobutane sulfonic acid (PFBS): 40%

**MW260S/QC205**

- Perfluorohexane sulfonic acid (PFHxS): 67%

**MW160/QC206**

- Sum of PFHxS and PFOS: 40%
- Sum of PFAS: 40%

**MW132D/QC207**

- Perfluorobutane sulfonic acid (PFBS): 156%

**MW468/QC208**

- 6:2 Fluorotelomer sulfonic acid (6:2 FTS): 40%

**SW024/QC210**

- Perfluorooctane sulfonic acid (PFOS): 35%
- Perfluorohexanoic acid (PFHxA): 67%

**SW062/QC211**

- Perfluorooctane sulfonic acid (PFOS): 46%
- Perfluorohexanoic acid (PFHxA): 67%

**SD014/QC212**

- Perfluorooctane sulfonic acid (PFOS): 41%
- Perfluoropentane sulfonic acid (PFPeS): 67%
- Perfluorohexanoic acid (PFHxA): 35%
- Perfluoroheptanoic acid (PFHpA): 40%
- Perfluorobutane sulfonic acid (PFBS): 143%
- Sum of PFHxS and PFOS: 40%
- Sum of PFAS 40%

**SD001/QC215**

- Perfluorooctanoic Acid (PFOA): 100%
- Perfluorooctane sulfonic acid (PFOS): 61%
- Perfluorohexane sulfonic acid (PFHxS): 126%
- Perfluorotridecanoic acid (PFTrDA): 57%
- Perfluorohexanoic acid (PFHxA): 133%
- Perfluoroheptane sulfonic acid (PFHpS): 100%
- Perfluorodecane sulfonic acid (PFDS): 67%
- Sum of PFHxS and PFOS: 66%
- Sum of PFAS: 67%

These RPDs outside the 30% acceptable range can be considered acceptable, in line with the DQIs, as the results are less than 10 times the LOR (no limit for acceptable range) or are less than 20 times the LOR (and the RPD is less than 50%). Some of the elevated RPDs may be attributed to the sediment matrix type and its heterogenous nature. Water and Soil RPD results are provided in Table D1 and Table D2.



**Comments**

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

**Attached:**

Table D1 – Water Field RPDs

Table D2 – Soil Field RPDs

Table D3 – Rinsate Blanks

Table D1 - Water Field RPDs

Chem_Group	ChemName	Units	LOR	Lab Report Number	ES2143044	ES2143044	RPD	ES2143044	ES2143044	RPD	ES2143044	ES2143044	RPD	ES2143044	ES2143044	RPD	
				Field ID	0908_MW123_211109	0908_QC101_211109	0908_MW244S_211110	0908_QC103_211110	0908_MW128D_211111	0908_QC105_211111	0908_MW247D_211112	0908_QC106_211112					
				Sampled Date/Time	9/11/2021 13:18	9/11/2021 13:18		10/11/2021 9:36	10/11/2021 9:36		11/11/2021 14:05	11/11/2021 14:05		12/11/2021 9:29	12/11/2021 9:29		
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.01	0	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.34	0.37	8	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	nc	0.05	0.05	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.25	0.27	8	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	nc	0.01	0.01	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	0	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.05	0.05	0	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.02	<0.02	0	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	0.59	0.64	8	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	nc	0.06	0.06	0
	Sum of PFAS	µg/L	0.01	0.67	0.72	7	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	nc	0.06	0.06	0
	Sum of PFAS (WA DER List)	µg/L	0.01	0.67	0.7	4	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	nc	0.06	0.06	0

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (>20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D1 - Water Field RPDs

Chem_Group	ChemName	Units	LOR	ES2143044			ES2143044			ES2143044			ES2143044		
				Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	<0.01	<0.01	nc	<0.01	<0.01	nc	0.03	0.04	29	<0.01	<0.01	nc	
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	nc	<b>0.02</b>	<b>0.03</b>	<b>40</b>	2.1	2.4	13	<0.01	<0.01	nc	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	nc	0.11	0.13	17	0.4	0.44	10	<0.01	<0.01	nc	
	4,2 Fluorotelomer sulfonic acid (4,2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6,2 Fluorotelomer sulfonic acid (6,2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8,2 Fluorotelomer sulfonic acid (8,2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	10,2 Fluorotelomer sulfonic acid (10,2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.03	0.03	0	0.05	0.05	0	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.03	0.04	29	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.06	0.05	18	0.18	0.2	11	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.03	0.03	0	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.02	0.02	0	<0.02	<0.02	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.04	0.04	0	0.05	0.05	0	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	0.13	0.16	21	2.5	2.84	13	<0.01	<0.01	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	0.26	0.28	7	2.89	3.27	12	<0.01	<0.01	nc
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	0.23	0.25	8	2.81	3.19	13	<0.01	<0.01	nc	

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (>20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D1 - Water Field RPDs

Chem. Group	ChemName	Units	LOR	ES2143044			ES2143123			ES2143123			ES2143123			ES2143123		
				Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.16	0.16	0	0.04	0.05	22	0.01	0.01	0			
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.07	0.08	13	12.8	10.5	20	2.18	2.3	5	0.23	0.17	30			
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.02	0.02	0	1.54	1.35	13	0.02	0.53	16	<0.05	0.22	9			
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.09	0.08	12	0.04	0.03	29	0.02	<0.02	0			
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.13	0.12	8	0.03	0.03	0	<0.02	<0.02	nc			
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.48	0.42	13	0.11	0.13	17	0.06	0.06	0			
	Perfluorooheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.12	0.1	18	0.04	0.05	22	<0.02	<0.02	nc			
	Perfluorooheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.08	0.07	13	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.08	0.07	13	<b>0.05</b>	<b>0.07</b>	<b>33</b>	<b>0.03</b>	<b>0.02</b>	<b>40</b>			
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc			
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
	Sum of PFHxS and PFOS	µg/L	0.01	0.09	0.1	11	14.3	11.8	19	2.63	2.63	7	0.47	0.39	19			
	Sum of PFAS	µg/L	0.01	0.09	0.1	11	15.5	12.9	18	2.94	3.19	8	0.59	0.48	21			
	Sum of PFAS (WADER List)	µg/L	0.01	0.09	0.1	11	15.3	12.7	19	2.86	3.11	8	0.57	0.48	17			

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (>20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D1 - Water Field RPDs

Chem. Group	ChemName	Units	LOR	ES2143044		284113		ES2143044		284113		ES2143044		284113	
				Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<b>0.02</b>	<b>0.01</b>	<b>67</b>	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	0.03	0	0	<0.01	<0.01	nc	<0.01	<0.01	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOsAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOsAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	0.05	0.05	0	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	0.05	0.05	0	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	0.05	0.05	0	<0.01	<0.01	nc	<0.01	<0.01	nc

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (>20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D1 - Water Field RPDs

Chem_Group	ChemName	Units	LOR	ES2143044			284113			ES2143044			284113			ES2143044			284113			
				Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	Field ID	Sampled Date/Time	RPD	
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<b>0.02</b>	<b>&lt;0.01</b>	<b>67</b>	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.09	0.08	12	<0.01	<0.01	nc	0.02	0.02	0	0.01	<0.01	0	0.01	<0.01	0	<0.01	<0.01	0	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.7	0.75	7	<0.01	<0.01	nc	<b>0.01</b>	<b>0.02</b>	<b>67</b>	0.02	0.02	0	0.02	0.02	0	0.02	0.02	0	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.05	18	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<b>0.02</b>	<b>0.04</b>	<b>67</b>	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.01	0	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<b>0.03</b>	<b>0.02</b>	<b>40</b>	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Sum of PFHxS and PFOS	µg/L	0.01	0.79	0.82	4	<0.01	<0.01	nc	0.03	0.04	29	<b>0.03</b>	<b>0.02</b>	<b>40</b>	<b>0.03</b>	<b>0.02</b>	<b>40</b>	<b>0.03</b>	<b>0.02</b>	<b>40</b>	
	Sum of PFAS	µg/L	0.01	0.95	0.98	3	<0.01	<0.01	nc	0.03	0.04	29	<b>0.03</b>	<b>0.02</b>	<b>40</b>	<b>0.03</b>	<b>0.02</b>	<b>40</b>	<b>0.03</b>	<b>0.02</b>	<b>40</b>	
	Sum of PFAS (W/ DER List)	µg/L	0.01																			

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (>20xLOR); 30 (>20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR



Table D1 - Water Field RPDs

Chem_Group	ChemName	Units	LOR	ES2143044		284113		ES2143044		284113		ES2143123		284113-A		ES2143123		284113-A			
				Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time	Field ID	Sampled Date/Time
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.1	0.08	22	0.34	0.32	6	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.31	0.23	30	14.9	14	6	<b>0.1</b>	<b>0.07</b>	<b>35</b>	<b>0.08</b>	<b>0.05</b>	<b>46</b>	<b>0.05</b>	<b>0.05</b>	<b>46</b>	<b>0.05</b>	<b>0.05</b>	<b>46</b>	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.79	3	5.74	5.3	8	0.12	0.12	0	0.13	0.12	8	0.13	0.12	8	0.13	0.12	8	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<b>0.06</b>	<b>0.09</b>	<b>40</b>	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	0.38	0.34	11	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.28	0.25	11	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.06	0	0.93	0.87	7	<b>0.04</b>	<b>0.02</b>	<b>67</b>	<b>0.04</b>	<b>0.02</b>	<b>67</b>	<b>0.04</b>	<b>0.02</b>	<b>67</b>	<b>0.04</b>	<b>0.02</b>	<b>67</b>
	Perfluorohexane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.08	0.1	22	0.26	0.3	14	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.15	0.18	18	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorododecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	0.02	<0.02	0	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<b>0.08</b>	<b>0.01</b>	<b>156</b>	0.27	0.23	16	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	0.2	0.2	0	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	1.08	1	8	20.6	19	8	0.22	0.19	15	0.21	0.17	21	0.22	0.17	21	0.22	0.17	21
Sum of PFAS	µg/L	0.01	1.43	1.3	10	23.5	22	7	0.26	0.21	21	0.25	0.21	21	0.26	0.21	21	0.26	0.21	17	
Sum of PFAS (WA DER List)	µg/L	0.01																			

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (> 20xLOR))  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D2 - Soil Field RPDs

Chem_Group	ChemName	Units	LOR	ES2143044			ES2143123			ES2143123			ES2143123			ES2143123		
				Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time	Lab Report Number	Field ID	Sampled Date/Time
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<b>0.0003</b>	<b>&lt;0.0002</b>	<b>40</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0026	0.0035	30	0.0038	0.0048	23	0.0207	0.0191	<b>8</b>	<b>0.002</b>	<b>0.001</b>	<b>67</b>	<0.0002	<0.0002	nc
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	0.0011	0.0013	17	0.0031	0.0023	<b>30</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	Perfluoroundecanoic acid (PFUdA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorotridecanoic acid (PFTDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<b>0.0009</b>	<b>&lt;0.0002</b>	<b>127</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<b>0.0005</b>	<b>&lt;0.0002</b>	<b>86</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<b>0.0003</b>	<b>&lt;0.0002</b>	<b>40</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.001	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Ethyl perfluorooctane sulfonamideethanol (EiFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	0.0002	<0.0002	<b>0</b>	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0026	0.0035	30	0.0049	0.0061	22	0.0238	0.0214	<b>11</b>	<b>0.002</b>	<b>0.001</b>	<b>67</b>	<0.0002	<0.0002	nc
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0026	0.0035	30	0.0049	0.0061	22	0.026	0.0214	<b>19</b>	<b>0.002</b>	<b>0.001</b>	<b>67</b>	<0.0002	<0.0002	nc
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0026	0.0035	30	0.0049	0.0061	22	0.0246	0.0214	<b>14</b>	<b>0.002</b>	<b>0.001</b>	<b>67</b>	<0.0002	<0.0002	nc

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (>20xLOR)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D2 - Soil Field RPDs

Chem_Group	ChemName	Units	LOR	ES2143044 284113			ES2143123 284113-A			ES2143123 284113-A			ES2143123 284113-A		
				Lab Report Number	ES2143044	284113	Lab Report Number	ES2143123	284113-A	Lab Report Number	ES2143123	284113-A	Lab Report Number	ES2143123	284113-A
Per- and Poly-fluoroalkyl Substances				0908_SS104_211119	0908_QC214_211119	RPD	0908_SD014_211117	0908_QC212_211117	RPD	0908_SD024_211117	0908_QC213_211117	RPD	0908_SD001_211119	0908_QC215_211119	RPD
				19/11/2021 8:21	19/11/2021 8:21		17/11/2021 14:30	17/11/2021 14:30		17/11/2021 15:17	17/11/2021 15:17		19/11/2021 14:30	19/11/2021 14:30	
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0005	0.0004	22	<0.0002	<0.0001	nc	<b>0.0003</b>	< <b>0.0001</b>	<b>100</b>
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0008	0.0009	12	<b>0.0894</b>	<b>0.059</b>	<b>41</b>	0.0034	0.0028	19	<b>0.0207</b>	<b>0.011</b>	<b>61</b>
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0083	0.0063	27	0.0005	0.0004	22	<b>0.0031</b>	<b>0.0007</b>	<b>126</b>
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	Perfluoroundecanoic acid (PFUdA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorotridecanoic acid (PFTDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<b>0.0009</b>	< <b>0.0005</b>	<b>57</b>
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<b>0.0004</b>	<b>0.0002</b>	<b>67</b>	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	0.0004	0.0004	0	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<b>0.001</b>	<b>0.0007</b>	<b>35</b>	<0.0002	<0.0001	nc	<b>0.0005</b>	< <b>0.0001</b>	<b>133</b>
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0006	0.0007	15	<0.0002	<0.0001	nc	<b>0.0003</b>	<b>0.0001</b>	<b>100</b>
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<b>0.0003</b>	<b>0.0002</b>	<b>40</b>	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	< <b>0.0002</b>	<b>0.0004</b>	<b>67</b>
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<b>0.0006</b>	<b>0.0001</b>	<b>143</b>	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.0002	nc	<0.001	0.0003	0	<0.001	<0.0002	nc	<0.001	<0.0002	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.001	nc	<0.0002	<0.001	nc	<0.0002	<0.001	nc	0.0002	<0.001	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0008	0.0009	12	<b>0.0977</b>	<b>0.065</b>	<b>40</b>	0.0039	0.0032	20	<b>0.0238</b>	<b>0.012</b>	<b>66</b>
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0008	0.0009	12	<b>0.102</b>	<b>0.068</b>	<b>40</b>	0.0039	0.0032	20	<b>0.026</b>	<b>0.013</b>	<b>67</b>
	Sum of PFAS (WA DER List)	mg/kg	0.0002										0.0246		

\*RPDs have only been considered where a concentration is greater than 1 times the LOR.  
 \*\*High RPDs are in bold (Acceptable RPDs for each LOR multiplier range are: 30 (1-10xLOR); 30 (10-20xLOR); 30 (>20xLOR)  
 \*\*\*Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.  
 Any methods in the row header relate to those used in the primary laboratory  
 nc = RPD non-calculable due to one or both results being below the laboratory LOR

Table D3 - Rinsate Blanks

		Lab Report Number	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044	ES2143044
		Field ID	0908_QC300_211108	0908_QC301_211109	0908_QC302_211110	0908_QC303_211111	0908_QC304_211112	0908_QC305_211115	0908_QC306_211116	0908_QC307_211117	0908_QC308_211118	0908_QC309_211119	0908_QC310_211126	
		Sample Date/Time	8/11/2021 16:50	9/11/2021 17:00	10/11/2021 17:00	11/11/2021 16:00	12/11/2021 16:00	15/11/2021 16:00	16/11/2021 15:50	17/11/2021 16:10	18/11/2021 15:45	19/11/2021 15:00	26/11/2021 11:03	
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
Chem_Group	ChemName	Units	LOR											
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EiFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EiFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

# Appendix E

## Laboratory Certificates

## Appendix E Laboratory Certificates



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143044  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 29733  
Site : 0908 Williamtown  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 6  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 27-Nov-2021 12:36  
Client Requested Due Date : 03-Dec-2021  
Issue Date : 08-Dec-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :  
Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 114 / 112

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the addition of samples #113 and #114.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2143044-064	15-Nov-2021 11:53	0908_SD059_211115	✓	✓
ES2143044-073	15-Nov-2021 12:12	0908_SS109_211115	✓	✓
ES2143044-074	15-Nov-2021 11:57	0908_SS108_211115	✓	✓
ES2143044-075	15-Nov-2021 12:45	0908_SS107_211115	✓	✓
ES2143044-076	15-Nov-2021 16:38	0908_SS106_211115	✓	✓
ES2143044-089	17-Nov-2021 10:45	0908_SS112_211117	✓	✓
ES2143044-090	17-Nov-2021 11:04	0908_SS111_211117	✓	✓
ES2143044-091	17-Nov-2021 12:09	0908_SS110_211117	✓	✓
ES2143044-092	17-Nov-2021 12:11	0908_QC112_211117	✓	✓
ES2143044-093	17-Nov-2021 12:59	0908_SS105_211117	✓	✓
ES2143044-094	17-Nov-2021 14:04	0908_SS102_211117	✓	✓
ES2143044-095	17-Nov-2021 14:30	0908_SS101_211117	✓	✓
ES2143044-102	19-Nov-2021 08:21	0908_SS104_211119	✓	✓
ES2143044-103	19-Nov-2021 08:57	0908_SS103_211119	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143044-001	08-Nov-2021 12:48	0908_MW106S_211108	✓
ES2143044-002	08-Nov-2021 12:51	0908_MW106D_211108	✓
ES2143044-003	08-Nov-2021 13:13	0908_MW212_211108	✓
ES2143044-004	08-Nov-2021 14:46	0908_MW209S_211108	✓
ES2143044-005	08-Nov-2021 14:46	0908_MW209D_211108	✓
ES2143044-006	08-Nov-2021 15:24	0908_MW156D_211108	✓
ES2143044-007	08-Nov-2021 15:24	0908_MW433_211108	✓
ES2143044-008	09-Nov-2021 08:47	0908_MW121_211109	✓
ES2143044-009	08-Nov-2021 16:50	0908_QC300_211108	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143044-010	09-Nov-2021 12:42	0908_MW118_211109	✓	
ES2143044-011	09-Nov-2021 13:18	0908_MW123_211109	✓	
ES2143044-012	09-Nov-2021 13:19	0908_QC101_211109	✓	
ES2143044-013	09-Nov-2021 14:42	0908_MW125D_211109	✓	
ES2143044-014	09-Nov-2021 14:59	0908_MW125S_211109	✓	
ES2143044-015	09-Nov-2021 15:55	0908_MW124_211109	✓	
ES2143044-016	10-Nov-2021 08:44	0908_MW198_211110	✓	
ES2143044-017	10-Nov-2021 09:05	0908_MW196_211110	✓	
ES2143044-018	10-Nov-2021 09:36	0908_MW244S_211110	✓	
ES2143044-019	10-Nov-2021 09:41	0908_QC103_211110	✓	
ES2143044-020	10-Nov-2021 09:56	0908_MW244D_211110	✓	
ES2143044-021	10-Nov-2021 10:53	0908_MW282S_211110	✓	
ES2143044-022	10-Nov-2021 11:12	0908_MW281S_211110	✓	
ES2143044-023	10-Nov-2021 11:55	0908_MW172_211110	✓	
ES2143044-024	10-Nov-2021 12:54	0908_MW108D_211110	✓	
ES2143044-025	10-Nov-2021 13:08	0908_MW108S_211110	✓	
ES2143044-026	10-Nov-2021 14:16	0908_MW202S_211110	✓	
ES2143044-027	10-Nov-2021 14:24	0908_MW202D_211110	✓	
ES2143044-028	11-Nov-2021 10:26	0908_MW279S_211111	✓	
ES2143044-029	11-Nov-2021 10:50	0908_MW128S_211111	✓	
ES2143044-030	11-Nov-2021 14:04	0908_QC105_211111	✓	
ES2143044-031	11-Nov-2021 14:05	0908_MW128D_211111	✓	
ES2143044-032	11-Nov-2021 14:50	0908_MW163_211111	✓	
ES2143044-033	11-Nov-2021 14:56	0908_MW316D_211111	✓	
ES2143044-034	11-Nov-2021 15:41	0908_MW232S_211111	✓	
ES2143044-035	11-Nov-2021 15:50	0908_MW232D_211111	✓	
ES2143044-036	12-Nov-2021 08:19	0908_MW162S_211112	✓	
ES2143044-037	12-Nov-2021 08:38	0908_MW162D_211112	✓	
ES2143044-038	12-Nov-2021 09:29	0908_MW247D_211112	✓	
ES2143044-039	12-Nov-2021 09:29	0908_QC106_211112	✓	
ES2143044-040	12-Nov-2021 09:56	0908_MW247S_211112	✓	
ES2143044-041	12-Nov-2021 15:53	0908_MW260D_211112	✓	
ES2143044-042	09-Nov-2021 15:55	0908_MW146S_211109	✓	
ES2143044-043	09-Nov-2021 17:00	0908_QC301_211109	✓	
ES2143044-044	09-Nov-2021 15:29	0908_MW278S_211109	✓	
ES2143044-045	09-Nov-2021 12:20	0908_MW258D_211109	✓	
ES2143044-046	09-Nov-2021 11:24	0908_MW257S_211109	✓	
ES2143044-047	09-Nov-2021 15:19	0908_MW278D_211109	✓	
ES2143044-048	09-Nov-2021 12:00	0908_MW258S_211109	✓	
ES2143044-049	09-Nov-2021 13:10	0908_QC100_211109	✓	
ES2143044-050	09-Nov-2021 14:45	0908_MW126D_211109	✓	



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143044-051	09-Nov-2021 15:53	0908_MW146AD_211109	✓	
ES2143044-052	09-Nov-2021 13:10	0908_MW263D_211109	✓	
ES2143044-053	09-Nov-2021 10:38	0908_MW256S_211109	✓	
ES2143044-054	09-Nov-2021 13:33	0908_MW263S_211109	✓	
ES2143044-055	09-Nov-2021 14:33	0908_MW126S_211109	✓	
ES2143044-056	08-Nov-2021 13:29	0908_MW208_211108	✓	
ES2143044-057	09-Nov-2021 11:02	0908_MW257D_211109	✓	
ES2143044-058	09-Nov-2021 10:17	0908_MW256D_211109	✓	
ES2143044-059	15-Nov-2021 09:13	0908_MW241S_211115	✓	
ES2143044-060	15-Nov-2021 09:25	0908_MW241D_211115	✓	
ES2143044-061	15-Nov-2021 10:23	0908_MW178_211115	✓	
ES2143044-062	15-Nov-2021 10:24	0908_QC107_211115	✓	
ES2143044-063	15-Nov-2021 11:50	0908_SW059_211115	✓	
ES2143044-065	15-Nov-2021 11:57	0908_MW132D_211115	✓	
ES2143044-066	15-Nov-2021 12:12	0908_MW132S_211115	✓	
ES2143044-067	15-Nov-2021 12:27	0908_MW318S_211115	✓	
ES2143044-068	15-Nov-2021 12:34	0908_MW318D_211115	✓	
ES2143044-069	15-Nov-2021 14:02	0908_MW130D_211115	✓	
ES2143044-070	15-Nov-2021 14:12	0908_MW130S_211115	✓	
ES2143044-071	15-Nov-2021 15:02	0908_MW160_211115	✓	
ES2143044-072	15-Nov-2021 15:55	0908_MW829_211115	✓	
ES2143044-077	16-Nov-2021 10:33	0908_MW169D_211116	✓	
ES2143044-078	16-Nov-2021 10:25	0908_MW169S_211116	✓	
ES2143044-079	16-Nov-2021 11:08	0908_MW175D_211116	✓	
ES2143044-080	16-Nov-2021 11:09	0908_QC108_211116	✓	
ES2143044-081	16-Nov-2021 11:27	0908_MW466_211116	✓	
ES2143044-082	16-Nov-2021 11:42	0908_MW468_211116	✓	
ES2143044-083	16-Nov-2021 12:01	0908_MW109D_211116	✓	
ES2143044-084	16-Nov-2021 13:42	0908_MW179D_211116	✓	
ES2143044-085	16-Nov-2021 13:46	0908_MW179S_211116	✓	
ES2143044-086	17-Nov-2021 09:02	0908_MW107S_211117	✓	
ES2143044-087	17-Nov-2021 09:15	0908_QC111_211117	✓	
ES2143044-088	17-Nov-2021 09:14	0908_MW107D_211117	✓	
ES2143044-096	18-Nov-2021 08:56	0908_MW317S_211118	✓	
ES2143044-097	18-Nov-2021 09:07	0908_QC102_211118	✓	
ES2143044-098	18-Nov-2021 09:41	0908_MW134D_211118	✓	
ES2143044-099	18-Nov-2021 13:52	0908_MW167_211118	✓	
ES2143044-100	18-Nov-2021 15:01	0908_MW168_211118	✓	
ES2143044-101	18-Nov-2021 15:43	0908_MW166_211118	✓	
ES2143044-104	10-Nov-2021 17:00	0908_QC302_211110	✓	
ES2143044-105	11-Nov-2021 16:00	0908_QC303_211111	✓	



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143044-106	12-Nov-2021 16:00	0908_QC304_211112		✓
ES2143044-107	15-Nov-2021 16:00	0908_QC305_211115		✓
ES2143044-108	16-Nov-2021 15:50	0908_QC306_211116		✓
ES2143044-109	17-Nov-2021 16:10	0908_QC307_211117		✓
ES2143044-110	18-Nov-2021 15:45	0908_QC308_211118		✓
ES2143044-111	19-Nov-2021 15:00	0908_QC309_211119		✓
ES2143044-112	26-Nov-2021 11:03	0908_QC310_211126		✓
ES2143044-113	18-Nov-2021 09:23	0908_MW134I_211118		✓
ES2143044-114	12-Nov-2021 16:10	0908_MW260S_211112		✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
Email  
Email  
Email  
Email  
Email  
Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
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Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
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Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESDat (ESRN\_ESDAT)

Email  
Email  
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Email  
Email



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_MW106S_211108		08/1/2021 12:48 PM	Water	ALS: 2 Non ALS: 0	No		X		
002	0908_MW106D_211108		08/1/2021 12:51 PM	Water	ALS: 2 Non ALS: 0	No		X		
003	0908_MW212_211108		08/1/2021 01:13 PM	Water	ALS: 2 Non ALS: 0	No		X		
004	0908_MW209S_211108		08/1/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
005	0908_MW209D_211108		08/1/2021 02:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
006	0908_MW156D_211108		08/1/2021 03:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
007	0908_MW433_211108		08/1/2021 03:24 PM	Water	ALS: 2 Non ALS: 0	No		X		
008	0908_MW121_211109		09/1/2021 08:47 AM	Water	ALS: 2 Non ALS: 0	No		X		
009	0908_QC300_211108		08/1/2021 04:50 PM	Water	ALS: 2 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143044**



Telephone : + 61-2-8784 8655

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RECEIVED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RELINQUISHED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RECEIVED BY: [REDACTED]  
 DATE TIME: [REDACTED]

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
010	0908_MW118_211109		09/11/2021 12:42 PM	Water	ALS: 4 Non ALS: 0	No		X		
011	0908_MW123_211109		09/11/2021 01:18 PM	Water	ALS: 2 Non ALS: 0	No		X		
012	0908_QC101_211109		09/11/2021 01:19 PM	Water	ALS: 2 Non ALS: 0	No		X		
013	0908_MW125D_211109		09/11/2021 02:42 PM	Water	ALS: 4 Non ALS: 0	No		X		
014	0908_MW125S_211109		09/11/2021 02:59 PM	Water	ALS: 2 Non ALS: 0	No		X		
015	0908_MW124_211109		09/11/2021 03:55 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	0908_MW198_211110		10/11/2021 08:44 AM	Water	ALS: 2 Non ALS: 0	No		X		
017	0908_MW196_211110		10/11/2021 09:05 AM	Water	ALS: 4 Non ALS: 0	No		X		
018	0908_MW244S_211110		10/11/2021 09:36 AM	Water	ALS: 2 Non ALS: 0	No		X		



CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_QC103_211110		10/11/2021 09:41 AM	Water	ALS: 2 Non ALS: 0	No		X		
020	0908_MMW244D_211110		10/11/2021 09:56 AM	Water	ALS: 2 Non ALS: 0	No		X		
021	0908_MMW282S_211110		10/11/2021 10:55 AM	Water	ALS: 2 Non ALS: 0	No		X		
022	0908_MMW281S_211110		10/11/2021 11:12 AM	Water	ALS: 2 Non ALS: 0	No		X		
023	0908_MMW172_211110		10/11/2021 11:55 AM	Water	ALS: 2 Non ALS: 0	No		X		
024	0908_MMW108D_211110		10/11/2021 12:54 PM	Water	ALS: 4 Non ALS: 0	No		X		
025	0908_MMW108S_211110		10/11/2021 01:08 PM	Water	ALS: 2 Non ALS: 0	No		X		
026	0908_MMW202S_211110		10/11/2021 02:16 PM	Water	ALS: 2 Non ALS: 0	No		X		
027	0908_MMW202D_211110		10/11/2021 02:24 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days	<b>LABORATORY USE ONLY (Circle)</b>
Biohazard info:	Custody Seal intact? Yes No N/A
	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	Random Sample Temperature on Receipt: °C
	Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0908_MMV279S_211111		11/11/2021 10:26 AM	Water	ALS: 2 Non ALS: 0	No		X		
029	0908_MMV128S_211111		11/11/2021 10:50 AM	Water	ALS: 2 Non ALS: 0	No		X		
030	0908_QC105_211111		11/11/2021 02:04 PM	Water	ALS: 2 Non ALS: 0	No		X		
031	0908_MMV128D_211111		11/11/2021 02:05 PM	Water	ALS: 2 Non ALS: 0	No		X		
032	0908_MMV163_211111		11/11/2021 02:50 PM	Water	ALS: 2 Non ALS: 0	No		X		
033	0908_MMV316D_211111		11/11/2021 02:56 PM	Water	ALS: 2 Non ALS: 0	No		X		
034	0908_MMV232S_211111		11/11/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
035	0908_MMV232D_211111		11/11/2021 03:50 PM	Water	ALS: 2 Non ALS: 0	No		X		
036	0908_MMV162S_211112		12/11/2021 08:19 AM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: 0908 Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_MMV162D_211112		12/11/2021 08:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
038	0908_MMV247D_211112		12/11/2021 09:29 AM	Water	ALS: 2 Non ALS: 0	No		X		
039	0908_QC106_211112		12/11/2021 09:29 AM	Water	ALS: 2 Non ALS: 0	No		X		
040	0908_MMV247S_211112		12/11/2021 09:56 AM	Water	ALS: 4 Non ALS: 0	No		X		
041	0908_MMV260D_211112		12/11/2021 03:53 PM	Water	ALS: 2 Non ALS: 0	No		X		
042	0908_MMV146S_2111109		12/11/2021 05:21 PM	Water	ALS: 2 Non ALS: 0	No		X		
043	0908_QC301_2111109		12/11/2021 05:25 PM	Water	ALS: 2 Non ALS: 0	No		X		
044	0908_MMV278S_2111109		12/11/2021 05:27 PM	Water	ALS: 4 Non ALS: 0	No		X		
045	0908_MMV256D_2111109		12/11/2021 05:31 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:



CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0908_MW257S_211109		12/11/2021 05:33 PM	Water	ALS: 2 Non ALS: 0	No		X		
047	0908_MW278D_211109		12/11/2021 05:35 PM	Water	ALS: 4 Non ALS: 0	No		X		
048	0908_MW266S_211109		12/11/2021 05:38 PM	Water	ALS: 2 Non ALS: 0	No		X		
049	0908_QC100_211109		12/11/2021 05:52 PM	Water	ALS: 2 Non ALS: 0	No		X		
050	0908_MW129D_211109		12/11/2021 05:43 PM	Water	ALS: 2 Non ALS: 0	No		X		
051	0908_MW146D_211109		12/11/2021 05:44 PM	Water	ALS: 2 Non ALS: 0	No		X		
052	0908_MW263D_211109		12/11/2021 05:45 PM	Water	ALS: 4 Non ALS: 0	No		X		
053	0908_MW256S_211109		12/11/2021 05:48 PM	Water	ALS: 2 Non ALS: 0	No		X		
054	0908_MW263S_211109		09/11/2021 01:33 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFA5 Soils - New Analysis SOIL	PFA5 Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
055	0908_MM126S_211109		12/11/2021 05:49 PM	Water	ALS: 2 Non ALS: 0	No		X		
056	0908_MM208_211108		12/11/2021 05:54 PM	Water	ALS: 2 Non ALS: 0	No		X		
057	0908_MM257D_211109		09/11/2021 11:02 AM	Water	ALS: 2 Non ALS: 0	No		X		
058	0908_MM256D_211109		09/11/2021 10:17 AM	Water	ALS: 2 Non ALS: 0	No		X		
059	0908_M241S_211115		15/11/2021 09:13 AM	Water	ALS: 4 Non ALS: 0	No		X		
060	0908_MM241D_211115		15/11/2021 09:25 AM	Water	ALS: 2 Non ALS: 0	No		X		
061	0908_MM178_211115		15/11/2021 10:23 AM	Water	ALS: 2 Non ALS: 0	No		X		
062	0908_QC107_211115		15/11/2021 10:24 AM	Water	ALS: 2 Non ALS: 0	No		X		
063	0908_SW059_211115		15/11/2021 11:50 AM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0908_SDO59_211115		15/11/2021 11:53 AM	Soil	ALS: 1 Non ALS: 0	No	X			
065	0908_MW132D_211115		15/11/2021 11:57 AM	Water	ALS: 2 Non ALS: 0	No		X		
066	0908_MW132S_211115		15/11/2021 12:12 PM	Water	ALS: 2 Non ALS: 0	No		X		
067	0908_MW318S_211115		15/11/2021 12:27 PM	Water	ALS: 2 Non ALS: 0	No		X		
068	0908_MW318D_211115		15/11/2021 12:34 PM	Water	ALS: 3 Non ALS: 0	No		X		
069	0908_MW130D_211115		15/11/2021 02:02 PM	Water	ALS: 4 Non ALS: 0	No		X		
070	0908_MW130S_211115		15/11/2021 02:12 PM	Water	ALS: 2 Non ALS: 0	No		X		
071	0908_MW160_211115		15/11/2021 03:02 PM	Water	ALS: 2 Non ALS: 0	No		X		
072	0908_MW829_211115		15/11/2021 03:55 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 80612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 80612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
073	0908_SS109_211115		15/11/2021 05:34 PM	Soil	ALS: 1 Non ALS: 0	No	X			
074	0908_SS108_211115		15/11/2021 05:49 PM	Soil	ALS: 1 Non ALS: 0	No	X			
075	0908_SS107_211115		15/11/2021 05:53 PM	Soil	ALS: 1 Non ALS: 0	No	X			
076	0908_SS106_211115		15/11/2021 05:00 PM	Soil	ALS: 1 Non ALS: 0	No	X			
077	0908_MMV169D_211116		16/11/2021 10:33 AM	Water	ALS: 2 Non ALS: 0	No	X			
078	0908_MMV169S_211116		16/11/2021 10:25 AM	Water	ALS: 2 Non ALS: 0	No	X			
079	0908_MMV175_211116		16/11/2021 11:08 AM	Water	ALS: 4 Non ALS: 0	No	X			
080	0908_QC108_211116		16/11/2021 11:09 AM	Water	ALS: 2 Non ALS: 0	No	X			
081	0908_MMV466_211116		16/11/2021 11:27 AM	Water	ALS: 2 Non ALS: 0	No	X			



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Willillantown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
082	0908_MMW468_211116		16/1/2021 11:42 AM	Water	ALS: 2 Non ALS: 0	No		X		
083	0908_MM109D_211116		16/1/2021 12:01 PM	Water	ALS: 2 Non ALS: 0	No		X		
084	0908_MM179D_211116		16/1/2021 01:42 PM	Water	ALS: 2 Non ALS: 0	No		X		
085	0908_MM179S_211116		16/1/2021 01:46 PM	Water	ALS: 2 Non ALS: 0	No		X		
086	0908_MM107S_211117		17/1/2021 09:02 AM	Water	ALS: 2 Non ALS: 0	No		X		
087	0908_GC111_211117		17/1/2021 09:15 AM	Water	ALS: 2 Non ALS: 0	No		X		
088	0908_MM107D_211117		17/1/2021 09:14 AM	Water	ALS: 2 Non ALS: 0	No		X		
089	0908_SS112_211117		17/1/2021 10:45 AM	Soil	ALS: 1 Non ALS: 0	No		X		
090	0908_SS111_211117		17/1/2021 11:04 AM	Soil	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
091	0908_SS110_211117		17/1/2021 12:09 PM	Soil	ALS: 1 Non ALS: 0	No	X			
092	0908_QC112_211117		17/1/2021 12:11 PM	Soil	ALS: 1 Non ALS: 0	No	X			
093	0908_SS105_211117		17/1/2021 12:59 PM	Soil	ALS: 1 Non ALS: 0	No	X			
094	0908_SS102_211117		17/1/2021 02:04 PM	Soil	ALS: 1 Non ALS: 0	No	X			
095	0908_SS101_211117		17/1/2021 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
096	0908_MW317S_211118		18/1/2021 09:23 AM	Water	ALS: 2 Non ALS: 0	No		X		
097	0908_QC102_211118		18/1/2021 09:07 AM	Water	ALS: 2 Non ALS: 0	No		X		
098	0908_MW134D_211118		18/1/2021 09:41 AM	Water	ALS: 2 Non ALS: 0	No		X		
099	0908_MW167_211118		18/1/2021 01:52 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
100	0908_MMV168_2111118		18/11/2021 03:01 PM	Water	ALS: 2 Non ALS: 0	No		X		
101	0908_MMV166_2111118		18/11/2021 03:43 PM	Water	ALS: 2 Non ALS: 0	No		X		
102	0908_SS104_2111119		19/11/2021 08:21 AM	Soil	ALS: 1 Non ALS: 0	No	X			
103	0908_SS103_2111119		19/11/2021 08:57 AM	Soil	ALS: 1 Non ALS: 0	No	X			
104	0908_QC302_2111110		25/11/2021 02:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
105	0908_QC303_2111111		11/11/2021 02:25 PM	Water	ALS: 2 Non ALS: 0	No		X		
106	0908_QC304_2111112		12/11/2021 02:26 PM	Water	ALS: 2 Non ALS: 0	No		X		
107	0908_QC305_2111115		15/11/2021 02:27 PM	Water	ALS: 2 Non ALS: 0	No		X		
108	0908_QC306_2111116		16/11/2021 02:28 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamstown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU002 4

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
109	0908_QC307_211117		17/11/2021 02:29 PM	Water	ALS: 2 Non ALS: 0	No		X		
110	0908_QC308_211118		18/11/2021 02:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
111	0908_QC309_211119		19/11/2021 02:31 PM	Water	ALS: 2 Non ALS: 0	No		X		
112	0908_QC310_211126		26/11/2021 11:03 AM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMV106S_211108	HDPE (no PTFE)	20 mL	00352101072621	Grey	No	
001	0908_MMV106S_211108	HDPE (no PTFE)	20 mL	00352101072664	Grey	No	
002	0908_MMV106D_211108	HDPE (no PTFE)	20 mL	00352101072666	Grey	No	
002	0908_MMV106D_211108	HDPE (no PTFE)	20 mL	00352101072604	Grey	No	
003	0908_MMV212_211108	HDPE (no PTFE)	20 mL	00352101072784	Grey	No	
003	0908_MMV212_211108	HDPE (no PTFE)	20 mL	00352101072748	Grey	No	
004	0908_MMV209S_211108	HDPE (no PTFE)	20 mL	00352101047556	Grey	No	
004	0908_MMV209S_211108	HDPE (no PTFE)	20 mL	00352101047521	Grey	No	
005	0908_MMV209D_211108	HDPE (no PTFE)	20 mL	00352101023158	Grey	No	
005	0908_MMV209D_211108	HDPE (no PTFE)	20 mL	00352101023171	Grey	No	
006	0908_MMV156D_211108	HDPE (no PTFE)	20 mL	00352101006336	Grey	No	
006	0908_MMV156D_211108	HDPE (no PTFE)	20 mL	00352101006497	Grey	No	
007	0908_MMV433_211108	HDPE (no PTFE)	20 mL	00352101047408	Grey	No	
007	0908_MMV433_211108	HDPE (no PTFE)	20 mL	00352101047374	Grey	No	
008	0908_MMV121_211109	HDPE (no PTFE)	20 mL	00352101023222	Grey	No	
008	0908_MMV121_211109	HDPE (no PTFE)	20 mL	00352101023389	Grey	No	
009	0908_QC300_211108	HDPE (no PTFE)	20 mL	00352010026034	Grey	No	
009	0908_QC300_211108	HDPE (no PTFE)	20 mL	00352010025830	Grey	No	
010	0908_MMV118_211109	HDPE (no PTFE)	20 mL	00352101047451	Grey	No	
010	0908_MMV118_211109	HDPE (no PTFE)	20 mL	00352101023134	Grey	No	
010	0908_MMV118_211109	HDPE (no PTFE)	20 mL	00352101023140	Grey	No	
010	0908_MMV118_211109	HDPE (no PTFE)	20 mL	00352101047560	Grey	No	
011	0908_MMV123_211109	HDPE (no PTFE)	20 mL	00352101023219	Grey	No	
011	0908_MMV123_211109	HDPE (no PTFE)	20 mL	00352101023150	Grey	No	
012	0908_QC101_211109	HDPE (no PTFE)	20 mL	00352101047288	Grey	No	
012	0908_QC101_211109	HDPE (no PTFE)	20 mL	00352101047533	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE: 4

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days							
Biohazard info:							
013	0908_MM129D_2111109	HDPE (no PTFE)	20 mL	00352101072799	Grey	No	
013	0908_MM129D_2111109	HDPE (no PTFE)	20 mL	00352101072620	Grey	No	
013	0908_MM129D_2111109	HDPE (no PTFE)	20 mL	00352101072787	Grey	No	
013	0908_MM129D_2111109	HDPE (no PTFE)	20 mL	00352101072521	Grey	No	
014	0908_MM125S_2111109	HDPE (no PTFE)	20 mL	00352101047385	Grey	No	
014	0908_MM125S_2111109	HDPE (no PTFE)	20 mL	00352101047310	Grey	No	
015	0908_MM124_2111109	HDPE (no PTFE)	20 mL	00352101047549	Grey	No	
015	0908_MM124_2111109	HDPE (no PTFE)	20 mL	00352101047436	Grey	No	
016	0908_MM198_2111110	HDPE (no PTFE)	20 mL	00352101023192	Grey	No	
016	0908_MM198_2111110	HDPE (no PTFE)	20 mL	00352101023282	Grey	No	
017	0908_MM196_2111110	HDPE (no PTFE)	20 mL	00352101023256	Grey	No	
017	0908_MM196_2111110	HDPE (no PTFE)	20 mL	00352101023123	Grey	No	
017	0908_MM196_2111110	HDPE (no PTFE)	20 mL	00352101023108	Grey	No	
017	0908_MM196_2111110	HDPE (no PTFE)	20 mL	00352101023365	Grey	No	
018	0908_MM244S_2111110	HDPE (no PTFE)	20 mL	00352101023266	Grey	No	
018	0908_MM244S_2111110	HDPE (no PTFE)	20 mL	00352101023195	Grey	No	
019	0908_QC103_2111110	HDPE (no PTFE)	20 mL	00352101023101	Grey	No	
019	0908_QC103_2111110	HDPE (no PTFE)	20 mL	00352101023314	Grey	No	
020	0908_MM244D_2111110	HDPE (no PTFE)	20 mL	00352101014343	Grey	No	
020	0908_MM244D_2111110	HDPE (no PTFE)	20 mL	00352101014243	Grey	No	
021	0908_MM282S_2111110	HDPE (no PTFE)	20 mL	00352010023960	Grey	No	
021	0908_MM282S_2111110	HDPE (no PTFE)	20 mL	00352010026065	Grey	No	
022	0908_MM281S_2111110	HDPE (no PTFE)	20 mL	00352101023279	Grey	No	
022	0908_MM281S_2111110	HDPE (no PTFE)	20 mL	00352101023362	Grey	No	
023	0908_MM172_2111110	HDPE (no PTFE)	20 mL	00352101023276	Grey	No	
023	0908_MM172_2111110	HDPE (no PTFE)	20 mL	00352101023299	Grey	No	
024	0908_MM108D_2111110	HDPE (no PTFE)	20 mL	00352101023338	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

Random Sample Temperature on Receipt:  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)	
Biohazard Info:		Custody Seal Intact? Yes No N/A	
		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
		Other comments: C	

ID	Sample ID	Matrix	Volume	Barcode	Color	Seal	Temp
024	0908_MW108D_211110	HDPE (no PTFE)	20 mL	00352101023113	Grey	No	
024	0908_MW108D_211110	HDPE (no PTFE)	20 mL	00352101023346	Grey	No	
024	0908_MW108D_211110	HDPE (no PTFE)	20 mL	00352101023141	Grey	No	
025	0908_MW108S_211110	HDPE (no PTFE)	20 mL	00352101023223	Grey	No	
025	0908_MW108S_211110	HDPE (no PTFE)	20 mL	00352101023289	Grey	No	
026	0908_MW202S_211110	HDPE (no PTFE)	20 mL	00352101023186	Grey	No	
026	0908_MW202S_211110	HDPE (no PTFE)	20 mL	00352101023237	Grey	No	
027	0908_MW202D_211110	HDPE (no PTFE)	20 mL	00352101023263	Grey	No	
027	0908_MW202D_211110	HDPE (no PTFE)	20 mL	00352101023105	Grey	No	
027	0908_MW202D_211110	HDPE (no PTFE)	20 mL	00352101023114	Grey	No	
027	0908_MW202D_211110	HDPE (no PTFE)	20 mL	00352101023187	Grey	No	
028	0908_MW279S_211111	HDPE (no PTFE)	20 mL	00352101023372	Grey	No	
028	0908_MW279S_211111	HDPE (no PTFE)	20 mL	00352101023335	Grey	No	
029	0908_MW128S_211111	HDPE (no PTFE)	20 mL	00352101023247	Grey	No	
029	0908_MW128S_211111	HDPE (no PTFE)	20 mL	00352101023385	Grey	No	
030	0908_OC105_211111	HDPE (no PTFE)	20 mL	00352101023227	Grey	No	
030	0908_OC105_211111	HDPE (no PTFE)	20 mL	00352101023350	Grey	No	
031	0908_MW128D_211111	HDPE (no PTFE)	20 mL	00352101023115	Grey	No	
031	0908_MW128D_211111	HDPE (no PTFE)	20 mL	00352101023278	Grey	No	
032	0908_MW163_211111	HDPE (no PTFE)	20 mL	00352101023249	Grey	No	
032	0908_MW163_211111	HDPE (no PTFE)	20 mL	00352101023197	Grey	No	
033	0908_MW316D_211111	HDPE (no PTFE)	20 mL	00352101023336	Grey	No	
033	0908_MW316D_211111	HDPE (no PTFE)	20 mL	00352101023347	Grey	No	
034	0908_MW232S_211111	HDPE (no PTFE)	20 mL	00352101023246	Grey	No	
034	0908_MW232S_211111	HDPE (no PTFE)	20 mL	00352101023328	Grey	No	
035	0908_MW232D_211111	HDPE (no PTFE)	20 mL	00352101023218	Grey	No	
035	0908_MW232D_211111	HDPE (no PTFE)	20 mL	00352101023275	Grey	No	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

ID	Sample ID	Matrix	Volume	Barcode	Color	Seal Intact?	Temp on Receipt?	Temp Unit
036	0908_MM162S_211112	HDPE (no PTFE)	20 mL	00352101023129	Grey	No		
036	0908_MM162S_211112	HDPE (no PTFE)	20 mL	00352101023145	Grey	No		
037	0908_MM162D_211112	HDPE (no PTFE)	20 mL	00352101023358	Grey	No		
037	0908_MM162D_211112	HDPE (no PTFE)	20 mL	00352101023191	Grey	No		
038	0908_MM247D_211112	HDPE (no PTFE)	20 mL	00352101023390	Grey	No		
038	0908_MM247D_211112	HDPE (no PTFE)	20 mL	00352101023383	Grey	No		
039	0908_QC106_211112	HDPE (no PTFE)	20 mL	00352101023132	Grey	No		
039	0908_QC106_211112	HDPE (no PTFE)	20 mL	00352101023126	Grey	No		
040	0908_MM247S_211112	HDPE (no PTFE)	20 mL	00352101023185	Grey	No		
040	0908_MM247S_211112	HDPE (no PTFE)	20 mL	00352101023320	Grey	No		
040	0908_MM247S_211112	HDPE (no PTFE)	20 mL	00352101023233	Grey	No		
040	0908_MM247S_211112	HDPE (no PTFE)	20 mL	00352101023110	Grey	No		
041	0908_MM260D_211112	HDPE (no PTFE)	20 mL	00352101072702	Grey	No		
041	0908_MM260D_211112	HDPE (no PTFE)	20 mL	00352101072568	Grey	No		
042	0908_MM146S_211109	HDPE (no PTFE)	20 mL	00352101072771	Grey	No		
042	0908_MM146S_211109	HDPE (no PTFE)	20 mL	00352101072775	Grey	No		
043	0908_QC301_211109	HDPE (no PTFE)	20 mL	00352101006430	Grey	No		
043	0908_QC301_211109	HDPE (no PTFE)	20 mL	00352101006330	Grey	No		
044	0908_MM278S_211109	HDPE (no PTFE)	20 mL	00352101047448	Grey	No		
044	0908_MM278S_211109	HDPE (no PTFE)	20 mL	00352101047487	Grey	No		
044	0908_MM278S_211109	HDPE (no PTFE)	20 mL	00352101023310	Grey	No		
044	0908_MM278S_211109	HDPE (no PTFE)	20 mL	00352101023167	Grey	No		
045	0908_MM258D_211109	HDPE (no PTFE)	20 mL	00352101023106	Grey	No		
045	0908_MM258D_211109	HDPE (no PTFE)	20 mL	00352101023288	Grey	No		
046	0908_MM257S_211109	HDPE (no PTFE)	20 mL	00352101006461	Grey	No		
046	0908_MM257S_211109	HDPE (no PTFE)	20 mL	00352101051137	Grey	No		
047	0908_MM278D_211109	HDPE (no PTFE)	20 mL	00352101023109	Grey	No		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamstown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days				Biohazard info:			
047	0908_MW278D_211109	HDPE (no PTFE)	20 mL	00352101072671	Grey	No	
047	0908_MW278D_211109	HDPE (no PTFE)	20 mL	00352101072733	Grey	No	
047	0908_MW278D_211109	HDPE (no PTFE)	20 mL	00352101023280	Grey	No	
048	0908_MW258S_211109	HDPE (no PTFE)	20 mL	00352101072662	Grey	No	
048	0908_MW258S_211109	HDPE (no PTFE)	20 mL	00352101072745	Grey	No	
049	0908_OC100_211109	HDPE (no PTFE)	20 mL	00352101047305	Grey	No	
049	0908_GC100_211109	HDPE (no PTFE)	20 mL	00352101047540	Grey	No	
050	0908_MW126D_211109	HDPE (no PTFE)	20 mL	00352101023351	Grey	No	
050	0908_MW126D_211109	HDPE (no PTFE)	20 mL	00352101023327	Grey	No	
051	0908_MW146D_211109	HDPE (no PTFE)	20 mL	00352101023220	Grey	No	
051	0908_MW146D_211109	HDPE (no PTFE)	20 mL	00352101023323	Grey	No	
052	0908_MW263D_211109	HDPE (no PTFE)	20 mL	00352101047463	Grey	No	
052	0908_MW263D_211109	HDPE (no PTFE)	20 mL	00352101072579	Grey	No	
052	0908_MW263D_211109	HDPE (no PTFE)	20 mL	00352101072558	Grey	No	
052	0908_MW263D_211109	HDPE (no PTFE)	20 mL	00352101047449	Grey	No	
053	0908_MW256S_211109	HDPE (no PTFE)	20 mL	00352101023303	Grey	No	
053	0908_MW256S_211109	HDPE (no PTFE)	20 mL	00352101023122	Grey	No	
054	0908_MW263S_211109	HDPE (no PTFE)	20 mL	00352101072626	Grey	No	
054	0908_MW263S_211109	HDPE (no PTFE)	20 mL	00352101047512	Grey	No	
054	0908_MW263S_211109	HDPE (no PTFE)	20 mL	00352101072718	Grey	No	
054	0908_MW263S_211109	HDPE (no PTFE)	20 mL	00352101047294	Grey	No	
055	0908_MW126S_211109	HDPE (no PTFE)	20 mL	00352101047430	Grey	No	
055	0908_MW126S_211109	HDPE (no PTFE)	20 mL	00352101047568	Grey	No	
056	0908_MW208_211108	HDPE (no PTFE)	20 mL	00352010022277	Grey	No	
056	0908_MW208_211108	HDPE (no PTFE)	20 mL	00352010022330	Grey	No	
057	0908_MW257D_211109	HDPE (no PTFE)	20 mL	00352101072599	Grey	No	
057	0908_MW257D_211109	HDPE (no PTFE)	20 mL	00352101072573	Grey	No	



# CHAIN OF CUSTODY

ALS COC#: 29733 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

ID	Sample ID	Material	Volume	Barcode	Color	Intact?	Temp?
058	0908_MMV256D_2111109	HDPE (no PTFE)	20 mL	00352101072524	Grey	No	
058	0908_MMV256D_2111109	HDPE (no PTFE)	20 mL	00352101072532	Grey	No	
059	0908_M241S_2111115	HDPE (no PTFE)	20 mL	00352101072674	Grey	No	
059	0908_M241S_2111115	HDPE (no PTFE)	20 mL	00352101072728	Grey	No	
059	0908_M241S_2111115	HDPE (no PTFE)	20 mL	00352101023334	Grey	No	
059	0908_M241S_2111115	HDPE (no PTFE)	20 mL	00352101023274	Grey	No	
060	0908_MMV241D_2111115	HDPE (no PTFE)	20 mL	00352101072782	Grey	No	
060	0908_MMV241D_2111115	HDPE (no PTFE)	20 mL	00352101072766	Grey	No	
061	0908_MMV178_2111115	HDPE (no PTFE)	20 mL	00352101023154	Grey	No	
061	0908_MMV178_2111115	HDPE (no PTFE)	20 mL	00352101023125	Grey	No	
062	0908_QC107_2111115	HDPE (no PTFE)	20 mL	00352101072805	Grey	No	
062	0908_QC107_2111115	HDPE (no PTFE)	20 mL	00352101072688	Grey	No	
063	0908_SW059_2111115	HDPE (no PTFE)	20 mL	00352101023287	Grey	No	
063	0908_SW059_2111115	HDPE (no PTFE)	20 mL	00352101023142	Grey	No	
064	0908_SD059_2111115	HDPE Soil Jar	200 mL	00621019053906	Grey	No	
065	0908_MMV132D_2111115	HDPE (no PTFE)	20 mL	00352101023214	Grey	No	
065	0908_MMV132D_2111115	HDPE (no PTFE)	20 mL	00352101023159	Grey	No	
066	0908_MMV132S_2111115	HDPE (no PTFE)	20 mL	00352101023297	Grey	No	
066	0908_MMV132S_2111115	HDPE (no PTFE)	20 mL	00352101023111	Grey	No	
067	0908_MMV318S_2111115	HDPE (no PTFE)	20 mL	00352101023161	Grey	No	
067	0908_MMV318S_2111115	HDPE (no PTFE)	20 mL	00352101023128	Grey	No	
068	0908_MMV318D_2111115	HDPE (no PTFE)	20 mL	00352101047578	Grey	No	
068	0908_MMV318D_2111115	HDPE (no PTFE)	20 mL	00352101072628	Grey	No	
068	0908_MMV318D_2111115	HDPE (no PTFE)	20 mL	00352101072751	Grey	No	
069	0908_MMV130D_2111115	HDPE (no PTFE)	20 mL	00352101023240	Grey	No	
069	0908_MMV130D_2111115	HDPE (no PTFE)	20 mL	00352101023291	Grey	No	
069	0908_MMV130D_2111115	HDPE (no PTFE)	20 mL	00352101023391	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamstown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

069	0908_MM130D_211115	HDPE (no PTFE)	20 mL	00352101023184	Grey	No	
070	0908_MM130S_211115	HDPE (no PTFE)	20 mL	00352101023319	Grey	No	
070	0908_MM130S_211115	HDPE (no PTFE)	20 mL	00352101023260	Grey	No	
071	0908_MM160_211115	HDPE (no PTFE)	20 mL	00352101023248	Grey	No	
071	0908_MM160_211115	HDPE (no PTFE)	20 mL	00352101023200	Grey	No	
072	0908_MM829_211115	HDPE (no PTFE)	20 mL	00352101047303	Grey	No	
072	0908_MM829_211115	HDPE (no PTFE)	20 mL	00352101047457	Grey	No	
073	0908_SS109_211115	HDPE Soil Jar	200 mL	00621019053974	Grey	No	
074	0908_SS108_211115	HDPE Soil Jar	200 mL	00621019053900	Grey	No	
075	0908_SS107_211115	HDPE Soil Jar	200 mL	00621019053843	Grey	No	
076	0908_SS106_211115	HDPE Soil Jar	200 mL	00621019053858	Grey	No	
077	0908_MM169D_211116	HDPE (no PTFE)	20 mL	00352101072754	Grey	No	
077	0908_MM169D_211116	HDPE (no PTFE)	20 mL	00352101072552	Grey	No	
078	0908_MM169S_211116	HDPE (no PTFE)	20 mL	00352101072538	Grey	No	
078	0908_MM169S_211116	HDPE (no PTFE)	20 mL	00352101072676	Grey	No	
079	0908_MM175_211116	HDPE (no PTFE)	20 mL	00352101023283	Grey	No	
079	0908_MM175_211116	HDPE (no PTFE)	20 mL	00352101023321	Grey	No	
079	0908_MM175_211116	HDPE (no PTFE)	20 mL	00352101023116	Grey	No	
079	0908_MM175_211116	HDPE (no PTFE)	20 mL	00352101023399	Grey	No	
080	0908_QC108_211116	HDPE (no PTFE)	20 mL	00352101023394	Grey	No	
080	0908_QC108_211116	HDPE (no PTFE)	20 mL	00352101023244	Grey	No	
081	0908_MM466_211116	HDPE (no PTFE)	20 mL	00352101072691	Grey	No	
081	0908_MM466_211116	HDPE (no PTFE)	20 mL	00352101072779	Grey	No	
082	0908_MM468_211116	HDPE (no PTFE)	20 mL	00352101023309	Grey	No	
082	0908_MM468_211116	HDPE (no PTFE)	20 mL	00352101023153	Grey	No	
083	0908_MM109D_211116	HDPE (no PTFE)	20 mL	00352101023209	Grey	No	
083	0908_MM109D_211116	HDPE (no PTFE)	20 mL	00352101023234	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard info:		Custody Seal intact? Yes No N/A					
		Free ice / frozen ice bricks present upon receipt? Yes No N/A					
		Random Sample Temperature on Receipt: C					
		Other comments:					
084	0908_MMV179D_211116	HDPE (no PTFE)	20 mL	00352101023236	Grey	No	
084	0908_MMV179D_211116	HDPE (no PTFE)	20 mL	00352101023330	Grey	No	
085	0908_MMV179S_211116	HDPE (no PTFE)	20 mL	00352101023316	Grey	No	
085	0908_MMV179S_211116	HDPE (no PTFE)	20 mL	00352101023189	Grey	No	
086	0908_MMV107S_211117	HDPE (no PTFE)	20 mL	00352101051020	Grey	No	
086	0908_MMV107S_211117	HDPE (no PTFE)	20 mL	00352101051000	Grey	No	
087	0908_QC111_211117	HDPE (no PTFE)	20 mL	00352101047535	Grey	No	
087	0908_QC111_211117	HDPE (no PTFE)	20 mL	00352101047292	Grey	No	
088	0908_MMV107D_211117	HDPE (no PTFE)	20 mL	00352010022580	Grey	No	
088	0908_MMV107D_211117	HDPE (no PTFE)	20 mL	00352010022585	Grey	No	
089	0908_SS112_211117	HDPE Soil Jar	200 mL	00620719087390	Grey	No	
090	0908_SS111_211117	HDPE Soil Jar	200 mL	00620719087493	Grey	No	
091	0908_SS110_211117	HDPE Soil Jar	200 mL	00621019053890	Grey	No	
092	0908_QC112_211117	HDPE Soil Jar	200 mL	00621019053935	Grey	No	
093	0908_SS105_211117	HDPE Soil Jar	200 mL	00621019053845	Grey	No	
094	0908_SS102_211117	HDPE Soil Jar	200 mL	00621019053899	Grey	No	
095	0908_SS101_211117	HDPE Soil Jar	200 mL	00621019053855	Grey	No	
096	0908_MMV317S_211118	HDPE (no PTFE)	20 mL	00352010022422	Grey	No	
096	0908_MMV317S_211118	HDPE (no PTFE)	20 mL	00352010022630	Grey	No	
097	0908_QC102_211118	HDPE (no PTFE)	20 mL	00352101023400	Grey	No	
097	0908_QC102_211118	HDPE (no PTFE)	20 mL	00352101023202	Grey	No	
098	0908_MMV134D_211118	HDPE (no PTFE)	20 mL	00352101023340	Grey	No	
098	0908_MMV134D_211118	HDPE (no PTFE)	20 mL	00352101023371	Grey	No	
099	0908_MMV167_211118	HDPE (no PTFE)	20 mL	00352010022534	Grey	No	
099	0908_MMV167_211118	HDPE (no PTFE)	20 mL	00352010022435	Grey	No	
100	0908_MMV168_211118	HDPE (no PTFE)	20 mL	00352101023251	Grey	No	
100	0908_MMV168_211118	HDPE (no PTFE)	20 mL	00352101023355	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908 Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

ID	DESCRIPTION	VOLUME	CONTAINER ID	COLOR	NO. OF BOTTLES	REMARKS
101	0908_MW/166_2111118	20 mL	003521010233353	Grey	No	
101	0908_MW/166_2111118	20 mL	003521010232321	Grey	No	
102	0908_SS104_2111119	200 mL	00621019053925	Grey	No	
103	0908_SS103_2111119	200 mL	00621019053969	Grey	No	
104	0908_QC302_2111110	20 mL	00352101023172	Grey	No	
104	0908_QC302_2111110	20 mL	00352101023147	Grey	No	
105	0908_QC303_2111111	20 mL	00352010028761	Grey	No	
105	0908_QC303_2111111	20 mL	00352010028777	Grey	No	
106	0908_QC304_2111112	20 mL	00352010048173	Grey	No	
106	0908_QC304_2111112	20 mL	00352010048063	Grey	No	
107	0908_QC305_2111115	20 mL	00352010022602	Grey	No	
107	0908_QC305_2111115	20 mL	00352010022594	Grey	No	
108	0908_QC306_2111116	20 mL	00352010048075	Grey	No	
108	0908_QC306_2111116	20 mL	00352010028794	Grey	No	
109	0908_QC307_2111117	20 mL	00352010028713	Grey	No	
109	0908_QC307_2111117	20 mL	00352010048182	Grey	No	
110	0908_QC308_2111118	20 mL	00352010028599	Grey	No	
110	0908_QC308_2111118	20 mL	00352010028620	Grey	No	
111	0908_QC309_2111119	20 mL	00352010048066	Grey	No	
111	0908_QC309_2111119	20 mL	00352010048208	Grey	No	
112	0908_QC310_2111126	20 mL	00352101017703	Grey	No	
112	0908_QC310_2111126	20 mL	00352101017503	Grey	No	

Total Bottle Count: ALS: 237, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 6062562 Client: Defence

ALS Compass COC Reference: 29733

# Samples: \_\_\_\_\_

Project Manager  
Phone: \_\_\_\_\_

Sampler:  
Phone: \_\_\_\_\_

Turnaround Requirements: Standard  Urgent \_\_\_\_\_

Special Instructions:

ALS Use Only	Custody seal intact?	YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
	Free ice frozen ice bricks upon receipt?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/>
	Random sample temperature on receipt?	3.5 °C

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
Date / Time: 26.11.21 12:30	Date / Time: 26.11.21 12:36	Date / Time: 26.11.21 17:00	Date / Time: 26/11/21 7:40 PM



ALS Use Only

Client Services Officer, Environmental  
Sydney

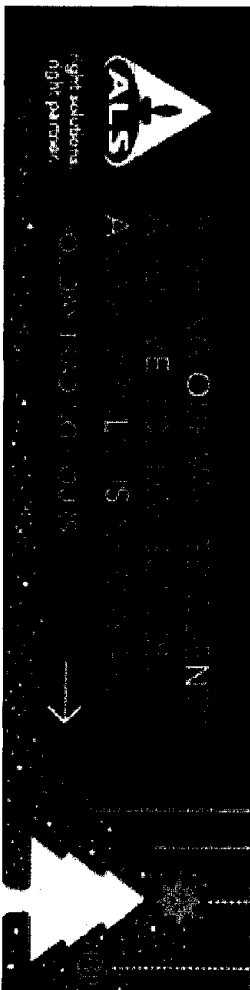


277-289 Woodpark Road  
Smithfield NSW 2164 AUSTRALIA



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From: [REDACTED]

Sent: Tuesday, 30 November 2021 10:12 AM

To: [REDACTED]

Cc: [REDACTED]

Subject: RE: [EXTERNAL] RE: SRN for ALS Workorder : ES2143123 | Your Reference: NSW\_0908\_PFASOMP

Thanks for sending these photos. They must have been missed in the final count that was done before submitting.

Please could you action as listed below? And could you also send the Esdat format SRN so I can do an in-depth check for time stamps and labels against my records please?

Environmental Division  
Sydney  
Work Order Reference  
**ES2143044**



Telephone : + 61-2-8784 8656



Unfortunately none of those resolve our missing sample #023 (0908\_SW081\_211117). I will check again on our end to see if it can be located.

Label	Bottle Date	Bottle Barcode	Action
MW1341	18/11/2021	00352101023258	Please add as new sampled to work order ES2143044. Date time as 18/11/21 09:23 AM. Analysis as EP231X. To re-issue SRN, and this email request
MW1341	18/11/2021	00352101023118	Please add as new sampled to work order ES2143044. Date time as 18/11/21 09:23 AM. Analysis as EP231X. To re-issue SRN, and this email request
MW231S	12/11/2021	00352101023329	Please add to existing sample (ES2143047-002) in work order ES2143047 as extra bottle. All details as per logged sample. Extra bottle collected for
MW260S	12/11/2021	00352101023131	Please add as new sampled to work order ES2143044. Date time as 12/11/21 16:10. Analysis as EP231X. To re-issue SRN, and this email request
MW260S	12/11/2021	00352101023253	Please add as new sampled to work order ES2143044. Date time as 12/11/21 16:10. Analysis as EP231X. To re-issue SRN, and this email request

Thank you for your assistance on this.

Regards,



**AECOM**  
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I'm sorry to hear about this, checking the scanning again the attached have not gone through but came in with the same work. Could you please advise if any of the attached may be relating to these missing samples?

Best regards,

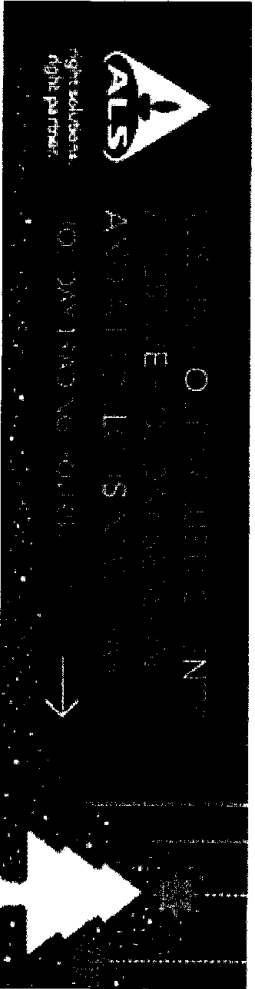
Client Services Officer, Environmental  
Sydney



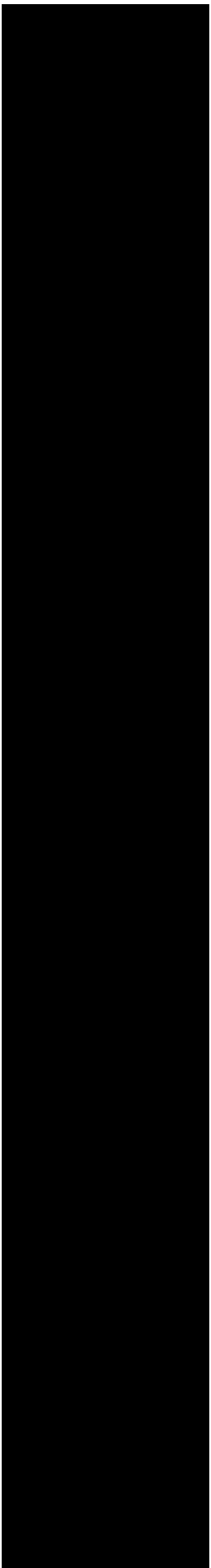
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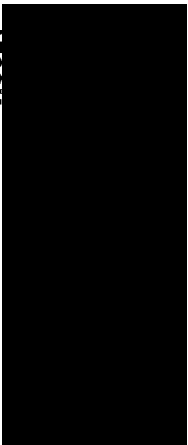


For this work order, on top of the changes already discussed in attached email chain, can you please have the team double check sample #023 (0908\_SW081\_211117) which is marked as not received for this batch?

Cam and I definitely collected this one and we believe we submitted all samples. There were many work orders in the same eskies, so maybe it was grouped with one of the other ones below?

0908\_PFASOMP batches from November: ES2143044, ES2143045, ES2143046, ES2143047, ES2143048, ES2143049, ES2143050, ES2143051, ES2143052, ES2143053 and ES2143123.

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_SDM01_211119		18/11/2021 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
020	0908_SDM07_211118		16/11/2021 03:39 PM	Soil	ALS: 1 Non ALS: 0	No	X			
021	0908_QC116_211116		16/11/2021 03:40 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0908_SWD07_211116		16/11/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0908_SWD081_211117		17/11/2021 10:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
024	0908_SDM01_211117		17/11/2021 10:42 AM	Soil	ALS: 1 Non ALS: 0	No	X			



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From: [angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com) <[angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com)>

Sent: Saturday, 27 November 2021 1:17 PM

Subject: [EXTERNAL] SRN FOR ALS Workorder : ES2143123 | Your Reference: NSW\_0908\_PFASOMP



# Deliverables for ALS Workorder ES2143123

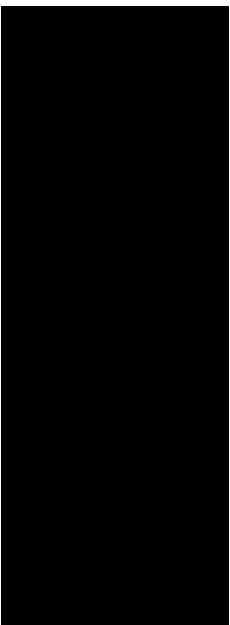
**Project: NSW\_0908\_PFASOMP**

Dear JESSICA ROY,

Please find enclosed the following deliverables for **ES2143123**:

- ES2143123\_0\_SRN\_211127131702.pdf

Report Recipients





CERTIFICATE OF ANALYSIS

Work Order : ES2143044
Amendment : 1
Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000
Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 29733
Sampler :
Site : 0908 Williamtown
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 114
No. of samples analysed : 112

Page : 1 of 51
Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 27-Nov-2021 12:36
Date Analysis Commenced : 27-Nov-2021
Issue Date : 08-Dec-2021 18:19



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results
Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Includes Organic Coordinator, LCMS Coordinator, and Sydney Inorganics, Smithfield, NSW.



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Positive result for analyte 6:2 Fluorotelomer sulfonic acid (6:2 FTS) on sample ES2143044\_048 has been confirmed by re-extraction re-analysis.
- EP231X: PFAS results for sample #113 and #114 confirmed by re-extraction and re-analysis.
- EP231X: Sample ES2143044\_090 required dilution due to sample matrix interferences (Internal standard suppression and retention time shift). LOR values have been adjusted accordingly. Surrogates were diluted out of analytical range and were not determined.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106S_21110 8	0908_MW106D_21110 8	0908_MW212_211108	0908_MW209S_21110 8	0908_MW209D_21110 8
Sampling date / time				08-Nov-2021 12:48	08-Nov-2021 12:51	08-Nov-2021 13:13	08-Nov-2021 14:46	08-Nov-2021 14:46
Compound	CAS Number	LOR	Unit	ES2143044-001 Result	ES2143044-002 Result	ES2143044-003 Result	ES2143044-004 Result	ES2143044-005 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.15	0.30	0.18	0.14	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.22	0.13	2.20	0.12
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.06	0.06	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.02	0.02	0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106S_21110 8	0908_MW106D_21110 8	0908_MW212_211108	0908_MW209S_21110 8	0908_MW209D_21110 8
Sampling date / time				08-Nov-2021 12:48	08-Nov-2021 12:51	08-Nov-2021 13:13	08-Nov-2021 14:46	08-Nov-2021 14:46
Compound	CAS Number	LOR	Unit	ES2143044-001 Result	ES2143044-002 Result	ES2143044-003 Result	ES2143044-004 Result	ES2143044-005 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<b>0.16</b>
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.19</b>	<b>0.60</b>	<b>0.39</b>	<b>2.35</b>	<b>0.29</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.19</b>	<b>0.52</b>	<b>0.31</b>	<b>2.34</b>	<b>0.13</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.19</b>	<b>0.60</b>	<b>0.39</b>	<b>2.35</b>	<b>0.29</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>92.4</b>	<b>92.9</b>	<b>85.5</b>	<b>88.5</b>	<b>106</b>
13C8-PFOA	----	0.02	%	<b>90.8</b>	<b>93.8</b>	<b>98.5</b>	<b>92.3</b>	<b>111</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW156D_21110 8	0908_MW433_211108	0908_MW121_211109	0908_MW118_211109	0908_MW123_211109
Sampling date / time				08-Nov-2021 15:24	08-Nov-2021 15:24	09-Nov-2021 08:47	09-Nov-2021 12:42	09-Nov-2021 13:18
Compound	CAS Number	LOR	Unit	ES2143044-006 Result	ES2143044-007 Result	ES2143044-008 Result	ES2143044-010 Result	ES2143044-011 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.05	<0.01	<0.01	0.25
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.05	<0.01	<0.01	0.34
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW156D_21110 8	0908_MW433_211108	0908_MW121_211109	0908_MW118_211109	0908_MW123_211109
Sampling date / time				08-Nov-2021 15:24	08-Nov-2021 15:24	09-Nov-2021 08:47	09-Nov-2021 12:42	09-Nov-2021 13:18
Compound	CAS Number	LOR	Unit	ES2143044-006	ES2143044-007	ES2143044-008	ES2143044-010	ES2143044-011
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.10	<0.01	<0.01	0.67
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.10	<0.01	<0.01	0.59
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.10	<0.01	<0.01	0.67
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	105	105	99.8	95.9	99.1
13C8-PFOA	----	0.02	%	116	113	112	99.3	103



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC101_211109	0908_MW125D_211109	0908_MW125S_211109	0908_MW124_211109	0908_MW198_211110
					9	9		
Sampling date / time				09-Nov-2021 13:19	09-Nov-2021 14:42	09-Nov-2021 14:59	09-Nov-2021 15:55	10-Nov-2021 08:44
Compound	CAS Number	LOR	Unit	ES2143044-012	ES2143044-013	ES2143044-014	ES2143044-015	ES2143044-016
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.22
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	<0.02	<0.02	<0.02	0.45
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.27	<0.01	<0.01	<0.01	5.53
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.22
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.37	<0.01	<0.01	<0.01	6.07
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.10
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	<0.02	<0.02	<0.02	0.61
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.07
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	<0.01	<0.01	<0.01	0.16
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC101_211109	0908_MW125D_211109	0908_MW125S_211109	0908_MW124_211109	0908_MW198_211110
					9	9		
Sampling date / time				09-Nov-2021 13:19	09-Nov-2021 14:42	09-Nov-2021 14:59	09-Nov-2021 15:55	10-Nov-2021 08:44
Compound	CAS Number	LOR	Unit	ES2143044-012	ES2143044-013	ES2143044-014	ES2143044-015	ES2143044-016
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.72</b>	<0.01	<0.01	<0.01	<b>13.4</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.64</b>	<0.01	<0.01	<0.01	<b>11.6</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.70</b>	<0.01	<0.01	<0.01	<b>12.8</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>95.1</b>	<b>103</b>	<b>98.4</b>	<b>93.9</b>	<b>95.9</b>
13C8-PFOA	----	0.02	%	<b>98.9</b>	<b>104</b>	<b>103</b>	<b>100</b>	<b>103</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW196_211110	0908_MW244S_21111 0	0908_QC103_211110	0908_MW244D_21111 0	0908_MW282S_21111 0
Sampling date / time				10-Nov-2021 09:05	10-Nov-2021 09:36	10-Nov-2021 09:41	10-Nov-2021 09:56	10-Nov-2021 10:53
Compound	CAS Number	LOR	Unit	ES2143044-017	ES2143044-018	ES2143044-019	ES2143044-020	ES2143044-021
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	<0.02	<0.02	0.80
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	0.70
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.53	<0.01	<0.01	<0.01	9.48
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.15	<0.02	<0.02	<0.02	0.34
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	23.1	<0.01	<0.01	<0.01	1.48
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.07	<0.02	<0.02	<0.02	0.32
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.38	<0.02	<0.02	<0.02	2.25
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	<0.02	<0.02	<0.02	0.21
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.21	<0.01	<0.01	<0.01	0.28
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW196_211110	0908_MW244S_21111 0	0908_QC103_211110	0908_MW244D_21111 0	0908_MW282S_21111 0
Sampling date / time				10-Nov-2021 09:05	10-Nov-2021 09:36	10-Nov-2021 09:41	10-Nov-2021 09:56	10-Nov-2021 10:53
Compound	CAS Number	LOR	Unit	ES2143044-017	ES2143044-018	ES2143044-019	ES2143044-020	ES2143044-021
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	25.6	<0.01	<0.01	<0.01	16.0
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	24.6	<0.01	<0.01	<0.01	11.0
Sum of PFAS (WA DER List)	----	0.01	µg/L	25.4	<0.01	<0.01	<0.01	14.9
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	90.5	93.6	95.2	95.9	102
13C8-PFOA	----	0.02	%	93.6	100	100	99.9	103



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_21111 0	0908_MW172_211110	0908_MW108D_21111 0	0908_MW108S_21111 0	0908_MW202S_21111 0
Sampling date / time				10-Nov-2021 11:12	10-Nov-2021 11:55	10-Nov-2021 12:54	10-Nov-2021 13:08	10-Nov-2021 14:16
Compound	CAS Number	LOR	Unit	ES2143044-022 Result	ES2143044-023 Result	ES2143044-024 Result	ES2143044-025 Result	ES2143044-026 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	1.63	0.09	0.21	0.03	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.90	0.06	0.20	0.03	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	21.4	0.21	1.41	0.70	0.11
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	8.86	<0.02	<0.02	0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	234	0.05	<0.01	0.09	0.34
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.53	<0.02	0.05	<0.02	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	4.89	0.07	0.33	0.06	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.63	<0.02	0.05	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	3.10	0.01	<0.01	0.02	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_21111 0	0908_MW172_211110	0908_MW108D_21111 0	0908_MW108S_21111 0	0908_MW202S_21111 0
Sampling date / time				10-Nov-2021 11:12	10-Nov-2021 11:55	10-Nov-2021 12:54	10-Nov-2021 13:08	10-Nov-2021 14:16
Compound	CAS Number	LOR	Unit	ES2143044-022	ES2143044-023	ES2143044-024	ES2143044-025	ES2143044-026
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	277	0.49	2.25	0.95	0.55
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	255	0.26	1.41	0.79	0.45
Sum of PFAS (WA DER List)	----	0.01	µg/L	266	0.43	2.05	0.90	0.55
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	88.6	97.4	94.0	92.3	102
13C8-PFOA	----	0.02	%	97.8	102	102	99.4	102





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW202D_21111 0	0908_MW279S_21111 1	0908_MW128S_21111 1	0908_QC105_211111 1	0908_MW128D_21111 1
Sampling date / time				10-Nov-2021 14:24	11-Nov-2021 10:26	11-Nov-2021 10:50	11-Nov-2021 14:04	11-Nov-2021 14:05
Compound	CAS Number	LOR	Unit	ES2143044-027 Result	ES2143044-028 Result	ES2143044-029 Result	ES2143044-030 Result	ES2143044-031 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.05	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.05	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.93	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.46	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.22	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW202D_21111 0	0908_MW279S_21111 1	0908_MW128S_21111 1	0908_QC105_211111 1	0908_MW128D_21111 1
Sampling date / time				10-Nov-2021 14:24	11-Nov-2021 10:26	11-Nov-2021 10:50	11-Nov-2021 14:04	11-Nov-2021 14:05
Compound	CAS Number	LOR	Unit	ES2143044-027 Result	ES2143044-028 Result	ES2143044-029 Result	ES2143044-030 Result	ES2143044-031 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.07	1.72	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.07	1.39	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.07	1.67	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	94.9	99.7	98.9	94.1	90.7
13C8-PFOA	----	0.02	%	100	101	104	98.8	96.5



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW163_211111	0908_MW316D_21111 1	0908_MW232S_21111 1	0908_MW232D_21111 1	0908_MW162S_21111 2
Sampling date / time				11-Nov-2021 14:50	11-Nov-2021 14:56	11-Nov-2021 15:41	11-Nov-2021 15:50	12-Nov-2021 08:19
Compound	CAS Number	LOR	Unit	ES2143044-032	ES2143044-033	ES2143044-034	ES2143044-035	ES2143044-036
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW163_211111	0908_MW316D_21111 1	0908_MW232S_21111 1	0908_MW232D_21111 1	0908_MW162S_21111 2
Sampling date / time				11-Nov-2021 14:50	11-Nov-2021 14:56	11-Nov-2021 15:41	11-Nov-2021 15:50	12-Nov-2021 08:19
Compound	CAS Number	LOR	Unit	ES2143044-032	ES2143044-033	ES2143044-034	ES2143044-035	ES2143044-036
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	102	90.1	100	102
13C8-PFOA	----	0.02	%	97.1	99.0	99.7	105	98.4



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_21111 2	0908_MW247D_21111 2	0908_QC106_211112	0908_MW247S_21111 2	0908_MW260D_21111 2
Sampling date / time				12-Nov-2021 08:38	12-Nov-2021 09:29	12-Nov-2021 09:29	12-Nov-2021 09:56	12-Nov-2021 15:53
Compound	CAS Number	LOR	Unit	ES2143044-037 Result	ES2143044-038 Result	ES2143044-039 Result	ES2143044-040 Result	ES2143044-041 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.07	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.09	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.01	0.01	1.09	0.03
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.05	0.05	0.96	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.15	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.04	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_21111 2	0908_MW247D_21111 2	0908_QC106_211112	0908_MW247S_21111 2	0908_MW260D_21111 2
Sampling date / time				12-Nov-2021 08:38	12-Nov-2021 09:29	12-Nov-2021 09:29	12-Nov-2021 09:56	12-Nov-2021 15:53
Compound	CAS Number	LOR	Unit	ES2143044-037 Result	ES2143044-038 Result	ES2143044-039 Result	ES2143044-040 Result	ES2143044-041 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.06	0.06	2.50	0.03
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.06	0.06	2.05	0.03
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.06	0.06	2.38	0.03
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	103	90.6	100	91.2	91.3
13C8-PFOA	----	0.02	%	106	94.7	106	93.6	102



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146S_21110 9	0908_MW278S_21110 9	0908_MW258D_21110 9	0908_MW257S_21110 9	0908_MW278D_21110 9
Sampling date / time				09-Nov-2021 15:55	09-Nov-2021 15:29	09-Nov-2021 12:20	09-Nov-2021 11:24	09-Nov-2021 15:19
Compound	CAS Number	LOR	Unit	ES2143044-042 Result	ES2143044-044 Result	ES2143044-045 Result	ES2143044-046 Result	ES2143044-047 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146S_21110 9	0908_MW278S_21110 9	0908_MW258D_21110 9	0908_MW257S_21110 9	0908_MW278D_21110 9
Sampling date / time				09-Nov-2021 15:55	09-Nov-2021 15:29	09-Nov-2021 12:20	09-Nov-2021 11:24	09-Nov-2021 15:19
Compound	CAS Number	LOR	Unit	ES2143044-042 Result	ES2143044-044 Result	ES2143044-045 Result	ES2143044-046 Result	ES2143044-047 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	98.2	104	95.2	90.8	98.1
13C8-PFOA	----	0.02	%	104	102	98.8	99.6	99.5





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258S_21110 9	0908_QC100_211109	0908_MW126D_21110 9	0908_MW146AD_211 109	0908_MW263D_21110 9
Sampling date / time				09-Nov-2021 12:00	09-Nov-2021 13:10	09-Nov-2021 14:45	09-Nov-2021 15:53	09-Nov-2021 13:10
Compound	CAS Number	LOR	Unit	ES2143044-048 Result	ES2143044-049 Result	ES2143044-050 Result	ES2143044-051 Result	ES2143044-052 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258S_21110 9	0908_QC100_211109	0908_MW126D_21110 9	0908_MW146AD_211 109	0908_MW263D_21110 9
Sampling date / time				09-Nov-2021 12:00	09-Nov-2021 13:10	09-Nov-2021 14:45	09-Nov-2021 15:53	09-Nov-2021 13:10
Compound	CAS Number	LOR	Unit	ES2143044-048	ES2143044-049	ES2143044-050	ES2143044-051	ES2143044-052
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<b>0.09</b>	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.09</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.09</b>	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>94.9</b>	<b>94.8</b>	<b>90.0</b>	<b>95.2</b>	<b>89.7</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>100</b>	<b>98.9</b>	<b>92.7</b>	<b>91.1</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW256S_21110 9	0908_MW263S_21110 9	0908_MW126S_21110 9	0908_MW208_211108	0908_MW257D_21110 9
Sampling date / time				09-Nov-2021 10:38	09-Nov-2021 13:33	09-Nov-2021 14:33	08-Nov-2021 13:29	09-Nov-2021 11:02
Compound	CAS Number	LOR	Unit	ES2143044-053 Result	ES2143044-054 Result	ES2143044-055 Result	ES2143044-056 Result	ES2143044-057 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.52	0.24	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.45	0.35	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	6.26	4.05	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.43	0.15	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	6.08	11.7	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.18	0.30	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	1.50	1.80	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.16	0.14	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.25	0.27	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW256S_21110 9	0908_MW263S_21110 9	0908_MW126S_21110 9	0908_MW208_211108	0908_MW257D_21110 9
Sampling date / time				09-Nov-2021 10:38	09-Nov-2021 13:33	09-Nov-2021 14:33	08-Nov-2021 13:29	09-Nov-2021 11:02
Compound	CAS Number	LOR	Unit	ES2143044-053 Result	ES2143044-054 Result	ES2143044-055 Result	ES2143044-056 Result	ES2143044-057 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	1.29	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	15.8	20.5	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	12.3	15.8	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	15.0	20.0	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	94.6	91.6	95.6	94.5	90.4
13C8-PFOA	----	0.02	%	95.9	96.7	96.1	101	97.8



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW256D_21110 9	0908_MW241S_21111 5	0908_MW241D_21111 5	0908_MW178_211115	0908_QC107_211115
Sampling date / time				09-Nov-2021 10:17	15-Nov-2021 09:13	15-Nov-2021 09:25	15-Nov-2021 10:23	15-Nov-2021 10:24
Compound	CAS Number	LOR	Unit	ES2143044-058 Result	ES2143044-059 Result	ES2143044-060 Result	ES2143044-061 Result	ES2143044-062 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.04	0.04
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.03
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.11	0.13
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.03
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.06	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW256D_21110 9	0908_MW241S_21111 5	0908_MW241D_21111 5	0908_MW178_211115	0908_QC107_211115
Sampling date / time				09-Nov-2021 10:17	15-Nov-2021 09:13	15-Nov-2021 09:25	15-Nov-2021 10:23	15-Nov-2021 10:24
Compound	CAS Number	LOR	Unit	ES2143044-058 Result	ES2143044-059 Result	ES2143044-060 Result	ES2143044-061 Result	ES2143044-062 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.26</b>	<b>0.28</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.13</b>	<b>0.16</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.23</b>	<b>0.25</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.7</b>	<b>87.8</b>	<b>97.2</b>	<b>89.1</b>	<b>92.3</b>
13C8-PFOA	----	0.02	%	<b>96.9</b>	<b>95.4</b>	<b>100</b>	<b>96.3</b>	<b>90.9</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_21111 5	0908_MW132S_21111 5	0908_MW318S_21111 5	0908_MW318D_21111 5	0908_MW130D_21111 5
Sampling date / time				15-Nov-2021 11:57	15-Nov-2021 12:12	15-Nov-2021 12:27	15-Nov-2021 12:34	15-Nov-2021 14:02
Compound	CAS Number	LOR	Unit	ES2143044-065 Result	ES2143044-066 Result	ES2143044-067 Result	ES2143044-068 Result	ES2143044-069 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	<0.02	<0.02	0.22	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	<0.02	<0.02	0.15	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.77	0.18	<0.01	0.52	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.08	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.31	0.40	0.01	0.03	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.05	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	0.02	<0.02	0.32	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.10	<0.01	<0.01	0.02	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_21111 5	0908_MW132S_21111 5	0908_MW318S_21111 5	0908_MW318D_21111 5	0908_MW130D_21111 5
Sampling date / time				15-Nov-2021 11:57	15-Nov-2021 12:12	15-Nov-2021 12:27	15-Nov-2021 12:34	15-Nov-2021 14:02
Compound	CAS Number	LOR	Unit	ES2143044-065 Result	ES2143044-066 Result	ES2143044-067 Result	ES2143044-068 Result	ES2143044-069 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.43	0.60	0.01	1.31	0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.08	0.58	0.01	0.55	0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.32	0.60	0.01	1.16	0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	94.7	92.9	95.2	97.7	94.2
13C8-PFOA	----	0.02	%	92.5	92.7	90.5	92.0	91.8





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW130S_21111 5	0908_MW160_211115	0908_MW829_211115	0908_MW169D_21111 6	0908_MW169S_21111 6
Sampling date / time				15-Nov-2021 14:12	15-Nov-2021 15:02	15-Nov-2021 15:55	16-Nov-2021 10:33	16-Nov-2021 10:25
Compound	CAS Number	LOR	Unit	ES2143044-070	ES2143044-071	ES2143044-072	ES2143044-077	ES2143044-078
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.08	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.02	0.03	0.21	0.15
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.01	0.02	0.08	0.11
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.11	0.12
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW130S_21111 5	0908_MW160_211115	0908_MW829_211115	0908_MW169D_21111 6	0908_MW169S_21111 6
Sampling date / time				15-Nov-2021 14:12	15-Nov-2021 15:02	15-Nov-2021 15:55	16-Nov-2021 10:33	16-Nov-2021 10:25
Compound	CAS Number	LOR	Unit	ES2143044-070	ES2143044-071	ES2143044-072	ES2143044-077	ES2143044-078
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<b>0.06</b>	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.01</b>	<b>0.03</b>	<b>0.05</b>	<b>0.58</b>	<b>0.42</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.01</b>	<b>0.03</b>	<b>0.05</b>	<b>0.29</b>	<b>0.26</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.01</b>	<b>0.03</b>	<b>0.05</b>	<b>0.54</b>	<b>0.42</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>93.1</b>	<b>96.3</b>	<b>90.8</b>	<b>100</b>	<b>91.8</b>
13C8-PFOA	----	0.02	%	<b>91.9</b>	<b>92.3</b>	<b>91.5</b>	<b>94.1</b>	<b>90.3</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW175D_21111 6	0908_QC108_211116	0908_MW466_211116	0908_MW468_211116	0908_MW109D_21111 6
Sampling date / time				16-Nov-2021 11:08	16-Nov-2021 11:09	16-Nov-2021 11:27	16-Nov-2021 11:42	16-Nov-2021 12:01
Compound	CAS Number	LOR	Unit	ES2143044-079	ES2143044-080	ES2143044-081	ES2143044-082	ES2143044-083
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.08	0.06	0.07
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	2.89	3.27	22.6	23.5	26.2
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.50	2.84	19.7	20.6	21.9
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.81	3.19	21.8	22.9	25.1
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	89.0	92.6	94.2	101	97.4
13C8-PFOA	----	0.02	%	90.5	95.3	92.6	89.3	98.1



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_21111 6	0908_MW179S_21111 6	0908_MW107S_21111 7	0908_QC111_211117 7	0908_MW107D_21111 7
Sampling date / time				16-Nov-2021 13:42	16-Nov-2021 13:46	17-Nov-2021 09:02	17-Nov-2021 09:15	17-Nov-2021 09:14
Compound	CAS Number	LOR	Unit	ES2143044-084 Result	ES2143044-085 Result	ES2143044-086 Result	ES2143044-087 Result	ES2143044-088 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	0.08	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.46	1.19	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.14	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.10	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.11	0.35	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.08	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.29	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_21111 6	0908_MW179S_21111 6	0908_MW107S_21111 7	0908_QC111_211117 7	0908_MW107D_21111 7
Sampling date / time				16-Nov-2021 13:42	16-Nov-2021 13:46	17-Nov-2021 09:02	17-Nov-2021 09:15	17-Nov-2021 09:14
Compound	CAS Number	LOR	Unit	ES2143044-084	ES2143044-085	ES2143044-086	ES2143044-087	ES2143044-088
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.69</b>	<b>2.39</b>	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.46</b>	<b>1.33</b>	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.64</b>	<b>2.29</b>	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.0</b>	<b>95.7</b>	<b>94.7</b>	<b>94.6</b>	<b>93.0</b>
13C8-PFOA	----	0.02	%	<b>92.7</b>	<b>92.0</b>	<b>88.1</b>	<b>87.5</b>	<b>87.9</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_21111 8	0908_QC102_211118	0908_MW134D_21111 8	0908_MW167_211118	0908_MW168_211118
Sampling date / time				18-Nov-2021 08:56	18-Nov-2021 09:07	18-Nov-2021 09:41	18-Nov-2021 13:52	18-Nov-2021 15:01
Compound	CAS Number	LOR	Unit	ES2143044-096 Result	ES2143044-097 Result	ES2143044-098 Result	ES2143044-099 Result	ES2143044-100 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.10
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.13
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.02	0.50	1.91
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.15	0.20
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	0.08	0.01	45.0	20.7
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.06
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.05	0.82
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.08
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.06	0.15
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_21111 8	0908_QC102_211118	0908_MW134D_21111 8	0908_MW167_211118	0908_MW168_211118
Sampling date / time				18-Nov-2021 08:56	18-Nov-2021 09:07	18-Nov-2021 09:41	18-Nov-2021 13:52	18-Nov-2021 15:01
Compound	CAS Number	LOR	Unit	ES2143044-096	ES2143044-097	ES2143044-098	ES2143044-099	ES2143044-100
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.09	0.10	0.03	45.8	24.2
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.09	0.10	0.03	45.5	22.6
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.09	0.10	0.03	45.6	23.8
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	95.4	88.4	103	99.9	107
13C8-PFOA	----	0.02	%	93.9	93.2	99.5	93.8	97.7





## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_MW166_211118	----	----	----	----
		Sampling date / time		18-Nov-2021 15:43	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143044-101	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.89	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.06	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	14.0	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_MW166_211118	----	----	----	----
		Sampling date / time	18-Nov-2021 15:43	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143044-101	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	15.2	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	14.9	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	15.1	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	96.1	----	----	----
13C8-PFOA	----	0.02	%	95.0	----	----	----



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC300_211108	0908_QC301_211109	0908_QC302_211110	0908_QC303_211111	0908_QC304_211112
Sampling date / time				08-Nov-2021 16:50	09-Nov-2021 17:00	10-Nov-2021 17:00	11-Nov-2021 16:00	12-Nov-2021 16:00	
Compound	CAS Number	LOR	Unit	ES2143044-009	ES2143044-043	ES2143044-104	ES2143044-105	ES2143044-106	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC300_211108	0908_QC301_211109	0908_QC302_211110	0908_QC303_211111	0908_QC304_211112
Sampling date / time					08-Nov-2021 16:50	09-Nov-2021 17:00	10-Nov-2021 17:00	11-Nov-2021 16:00	12-Nov-2021 16:00
Compound	CAS Number	LOR	Unit	ES2143044-009	ES2143044-043	ES2143044-104	ES2143044-105	ES2143044-106	ES2143044-106
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	101	94.8	105	107	89.2	89.2
13C8-PFOA	----	0.02	%	115	96.3	97.5	98.1	96.5	96.5





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC305_211115	0908_QC306_211116	0908_QC307_211117	0908_QC308_211118	0908_QC309_211119
Sampling date / time					15-Nov-2021 16:00	16-Nov-2021 15:50	17-Nov-2021 16:10	18-Nov-2021 15:45	19-Nov-2021 15:00
Compound	CAS Number	LOR	Unit	ES2143044-107	ES2143044-108	ES2143044-109	ES2143044-110	ES2143044-111	ES2143044-111
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	98.5	106	93.7	108	101	101
13C8-PFOA	----	0.02	%	101	102	97.2	103	100	100



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC310_211126	0908_MW134I_21111 8	0908_MW260S_21111 2	----	----
Sampling date / time					26-Nov-2021 11:03	18-Nov-2021 09:23	12-Nov-2021 16:10	----	----
Compound	CAS Number	LOR	Unit	ES2143044-112	ES2143044-113	ES2143044-114	-----	-----	
				Result	Result	Result	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.03</b>	<b>0.01</b>	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	<b>0.02</b>	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC310_211126	0908_MW134I_21111 8	0908_MW260S_21111 2	----	----
Sampling date / time				26-Nov-2021 11:03	18-Nov-2021 09:23	12-Nov-2021 16:10	----	----	
Compound	CAS Number	LOR	Unit	ES2143044-112	ES2143044-113	ES2143044-114	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.05</b>	<b>0.03</b>	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.05</b>	<b>0.03</b>	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.05</b>	<b>0.03</b>	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>97.9</b>	<b>94.7</b>	<b>95.2</b>	----	----	
13C8-PFOA	----	0.02	%	<b>102</b>	<b>115</b>	<b>114</b>	----	----	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS109_211115	0908_SS108_211115	0908_SS107_211115	0908_SS106_211115	0908_SS112_211117
Sampling date / time				15-Nov-2021 12:12	15-Nov-2021 11:57	15-Nov-2021 12:45	15-Nov-2021 16:38	17-Nov-2021 10:45	
Compound	CAS Number	LOR	Unit	ES2143044-073	ES2143044-074	ES2143044-075	ES2143044-076	ES2143044-089	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	24.0	3.4	15.4	29.9	20.5	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0006	0.0004	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0020	0.0027	0.0064	0.0021	0.0012	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS109_211115	0908_SS108_211115	0908_SS107_211115	0908_SS106_211115	0908_SS112_211117
Sampling date / time				15-Nov-2021 12:12	15-Nov-2021 11:57	15-Nov-2021 12:45	15-Nov-2021 16:38	17-Nov-2021 10:45	
Compound	CAS Number	LOR	Unit	ES2143044-073	ES2143044-074	ES2143044-075	ES2143044-076	ES2143044-089	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0020	0.0027	0.0064	0.0030	0.0016	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0020	0.0027	0.0064	0.0027	0.0016	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0020	0.0027	0.0064	0.0030	0.0016	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	81.5	94.5	90.5	83.0	101	
13C8-PFOA	----	0.0002	%	94.0	98.0	95.0	98.0	99.0	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS111_211117	0908_SS110_211117	0908_QC112_211117	0908_SS105_211117	0908_SS102_211117
Sampling date / time				17-Nov-2021 11:04	17-Nov-2021 12:09	17-Nov-2021 12:11	17-Nov-2021 12:59	17-Nov-2021 14:04	
Compound	CAS Number	LOR	Unit	ES2143044-090	ES2143044-091	ES2143044-092	ES2143044-093	ES2143044-094	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	17.3	30.4	31.9	8.2	15.3	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0050	0.0026	0.0035	0.0004	0.0031	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0125	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0125	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS111_211117	0908_SS110_211117	0908_QC112_211117	0908_SS105_211117	0908_SS102_211117
Sampling date / time				17-Nov-2021 11:04	17-Nov-2021 12:09	17-Nov-2021 12:11	17-Nov-2021 12:59	17-Nov-2021 14:04	
Compound	CAS Number	LOR	Unit	ES2143044-090	ES2143044-091	ES2143044-092	ES2143044-093	ES2143044-094	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0125	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0125	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0125	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0050	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0050	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0050	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0050	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0050	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<0.0050	0.0026	0.0035	0.0004	0.0031	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0050	0.0026	0.0035	0.0004	0.0031	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0050	0.0026	0.0035	0.0004	0.0031	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	Not Determined	94.5	93.0	102	96.5	
13C8-PFOA	----	0.0002	%	Not Determined	96.0	93.5	86.5	90.0	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS101_211117	0908_SS104_211119	0908_SS103_211119	----	----
Sampling date / time				17-Nov-2021 14:30	19-Nov-2021 08:21	19-Nov-2021 08:57	----	----	
Compound	CAS Number	LOR	Unit	ES2143044-095	ES2143044-102	ES2143044-103	-----	-----	
				Result	Result	Result	----	----	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>38.4</b>	<b>31.5</b>	<b>18.4</b>	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0004</b>	<0.0002	<0.0002	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0040</b>	<b>0.0008</b>	<b>0.0015</b>	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS101_211117	0908_SS104_211119	0908_SS103_211119	----	----
Sampling date / time				17-Nov-2021 14:30	19-Nov-2021 08:21	19-Nov-2021 08:57	----	----	
Compound	CAS Number	LOR	Unit	ES2143044-095	ES2143044-102	ES2143044-103	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0044</b>	<b>0.0008</b>	<b>0.0015</b>	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0044</b>	<b>0.0008</b>	<b>0.0015</b>	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0044</b>	<b>0.0008</b>	<b>0.0015</b>	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>83.5</b>	<b>99.0</b>	<b>91.0</b>	----	----	
13C8-PFOA	----	0.0002	%	<b>72.5</b>	<b>93.5</b>	<b>89.0</b>	----	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143044	Page	: 1 of 16
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 27-Nov-2021
Site	: 0908 Williamtown	Issue Date	: 08-Dec-2021
Sampler	: [REDACTED]	No. of samples received	: 114
Order number	: 60612562_2.1	No. of samples analysed	: 112

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.





### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143044--079	0908_MW175D_211116	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	11	151	7.28	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	6	151	3.97	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b>								
0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	----	----	----	27-Nov-2021	29-Nov-2021	✓
<b>HDPE Soil Jar (EA055)</b>								
0908_SS112_211117, 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_SS111_211117, 0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	----	----	----	30-Nov-2021	01-Dec-2021	✓
<b>HDPE Soil Jar (EA055)</b>								
0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	----	----	----	30-Nov-2021	03-Dec-2021	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS112_211117,	0908_SS111_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS112_211117,	0908_SS111_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS112_211117,	0908_SS111_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS112_211117,	0908_SS111_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS109_211115, 0908_SS107_211115,	0908_SS108_211115, 0908_SS106_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS112_211117,	0908_SS111_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	01-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS110_211117, 0908_SS105_211117, 0908_SS101_211117	0908_QC112_211117, 0908_SS102_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS104_211119,	0908_SS103_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>									
0908_MW162S_211112, 0908_MW247D_211112, 0908_MW247S_211112,	0908_MW162D_211112, 0908_QC106_211112, 0908_MW260D_211112	12-Nov-2021	30-Nov-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_211115, 0908_MW132S_211115, 0908_MW318D_211115, 0908_MW130S_211115, 0908_MW829_211115	0908_MW132D_211115, 0908_MW318S_211115, 0908_MW130D_211115, 0908_MW160_211115,	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241S_211115, 0908_MW178_211115	0908_MW241D_211115,	15-Nov-2021	30-Nov-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW169D_211116, 0908_MW175D_211116, 0908_MW466_211116, 0908_MW109D_211116, 0908_MW179S_211116	0908_MW169S_211116, 0908_QC108_211116, 0908_MW468_211116, 0908_MW179D_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_211116		16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107S_211117, 0908_MW107D_211117,	0908_QC111_211117, 0908_QC307_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	16-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW317S_211118, 0908_MW134D_211118, 0908_MW168_211118, 0908_QC308_211118,	0908_QC102_211118, 0908_MW167_211118, 0908_MW166_211118, 0908_MW134I_211118	18-Nov-2021	01-Dec-2021	17-May-2022	✓	03-Dec-2021	17-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC309_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC310_211126		26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓	





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231B: Perfluoroalkyl Carboxylic Acids - Continued</b>									
0908_MW162S_211112, 0908_MW247D_211112, 0908_MW247S_211112,	0908_MW162D_211112, 0908_QC106_211112, 0908_MW260D_211112	12-Nov-2021	30-Nov-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_211115, 0908_MW132S_211115, 0908_MW318D_211115, 0908_MW130S_211115, 0908_MW829_211115	0908_MW132D_211115, 0908_MW318S_211115, 0908_MW130D_211115, 0908_MW160_211115,	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241S_211115, 0908_MW178_211115	0908_MW241D_211115,	15-Nov-2021	30-Nov-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW169D_211116, 0908_MW175D_211116, 0908_MW466_211116, 0908_MW109D_211116, 0908_MW179S_211116	0908_MW169S_211116, 0908_QC108_211116, 0908_MW468_211116, 0908_MW179D_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_211116		16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107S_211117, 0908_MW107D_211117,	0908_QC111_211117, 0908_QC307_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	16-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW317S_211118, 0908_MW134D_211118, 0908_MW168_211118, 0908_QC308_211118,	0908_QC102_211118, 0908_MW167_211118, 0908_MW166_211118, 0908_MW134I_211118	18-Nov-2021	01-Dec-2021	17-May-2022	✓	03-Dec-2021	17-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC309_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC310_211126		26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓	







Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
0908_MW162S_211112, 0908_MW247D_211112, 0908_MW247S_211112,	0908_MW162D_211112, 0908_QC106_211112, 0908_MW260D_211112	12-Nov-2021	30-Nov-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_211115, 0908_MW132S_211115, 0908_MW318D_211115, 0908_MW130S_211115, 0908_MW829_211115	0908_MW132D_211115, 0908_MW318S_211115, 0908_MW130D_211115, 0908_MW160_211115,	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241S_211115, 0908_MW178_211115	0908_MW241D_211115,	15-Nov-2021	30-Nov-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW169D_211116, 0908_MW175D_211116, 0908_MW466_211116, 0908_MW109D_211116, 0908_MW179S_211116	0908_MW169S_211116, 0908_QC108_211116, 0908_MW468_211116, 0908_MW179D_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_211116		16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	15-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107S_211117, 0908_MW107D_211117,	0908_QC111_211117, 0908_QC307_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	16-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW317S_211118, 0908_MW134D_211118, 0908_MW168_211118, 0908_QC308_211118,	0908_QC102_211118, 0908_MW167_211118, 0908_MW166_211118, 0908_MW134I_211118	18-Nov-2021	01-Dec-2021	17-May-2022	✓	03-Dec-2021	17-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC309_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC310_211126		26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓	





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued</b>								
0908_MW162S_211112, 0908_MW247D_211112, 0908_MW247S_211112,	0908_MW162D_211112, 0908_QC106_211112, 0908_MW260D_211112	12-Nov-2021	30-Nov-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_211115, 0908_MW132S_211115, 0908_MW318D_211115, 0908_MW130S_211115, 0908_MW829_211115	0908_MW132D_211115, 0908_MW318S_211115, 0908_MW130D_211115, 0908_MW160_211115,	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241S_211115, 0908_MW178_211115	0908_MW241D_211115,	15-Nov-2021	30-Nov-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW169D_211116, 0908_MW175D_211116, 0908_MW466_211116, 0908_MW109D_211116, 0908_MW179S_211116	0908_MW169S_211116, 0908_QC108_211116, 0908_MW468_211116, 0908_MW179D_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_211116		16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	15-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107S_211117, 0908_MW107D_211117,	0908_QC111_211117, 0908_QC307_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	16-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW317S_211118, 0908_MW134D_211118, 0908_MW168_211118, 0908_QC308_211118,	0908_QC102_211118, 0908_MW167_211118, 0908_MW166_211118, 0908_MW134I_211118	18-Nov-2021	01-Dec-2021	17-May-2022	✓	03-Dec-2021	17-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC309_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC310_211126		26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums - Continued</b>								
0908_MW162S_211112, 0908_MW247D_211112, 0908_MW247S_211112,	0908_MW162D_211112, 0908_QC106_211112, 0908_MW260D_211112	12-Nov-2021	30-Nov-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_211115, 0908_MW132S_211115, 0908_MW318D_211115, 0908_MW130S_211115, 0908_MW829_211115	0908_MW132D_211115, 0908_MW318S_211115, 0908_MW130D_211115, 0908_MW160_211115,	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241S_211115, 0908_MW178_211115	0908_MW241D_211115,	15-Nov-2021	30-Nov-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW169D_211116, 0908_MW175D_211116, 0908_MW466_211116, 0908_MW109D_211116, 0908_MW179S_211116	0908_MW169S_211116, 0908_QC108_211116, 0908_MW468_211116, 0908_MW179D_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_211116		16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	15-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107S_211117, 0908_MW107D_211117,	0908_QC111_211117, 0908_QC307_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	16-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW317S_211118, 0908_MW134D_211118, 0908_MW168_211118, 0908_QC308_211118,	0908_QC102_211118, 0908_MW167_211118, 0908_MW166_211118, 0908_MW134I_211118	18-Nov-2021	01-Dec-2021	17-May-2022	✓	03-Dec-2021	17-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC309_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC310_211126		26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	5	46	10.87	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	37	10.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	11	151	7.28	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	151	5.30	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	151	5.30	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	151	3.97	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143044

Page : 1 of 35

Amendment : 1

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 29733

Telephone : +61 2 8784 8555
Date Samples Received : 27-Nov-2021
Date Analysis Commenced : 27-Nov-2021
Issue Date : 08-Dec-2021

Sampler :
Site : 0908 Williamtown
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 114
No. of samples analysed : 112



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Rows include Organic Coordinator, LCMS Coordinator, and LCMS Coordinator.





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4041553)</b>									
ES2143044-074	0908_SS108_211115	EA055: Moisture Content	----	0.1	%	3.4	3.7	6.7	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4046372)</b>									
EP2114169-015	Anonymous	EA055: Moisture Content	----	0.1	%	0.6	0.8	33.2	No Limit
ES2143006-010	Anonymous	EA055: Moisture Content	----	0.1	%	14.6	14.8	1.7	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4046373)</b>									
ES2143044-102	0908_SS104_211119	EA055: Moisture Content	----	0.1	%	31.5	33.3	5.6	0% - 20%
ES2143123-034	Anonymous	EA055: Moisture Content	----	0.1	%	38.3	42.8	11.1	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4044984)</b>									
ES2142995-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2142995-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0003	0.0004	28.2	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045649) - continued</b>									
ES2142974-052	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2143044-103	0908_SS103_211119	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0015	0.0018	16.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4044984)</b>									
ES2142995-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2142995-013	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649) - continued</b>									
ES2142974-052	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2143044-103	0908_SS103_211119	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044984)</b>									
ES2142995-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2142995-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044984) - continued</b>									
ES2142995-013	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	0908_SS103_211119	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044984)</b>									
ES2142995-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2142995-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044984) - continued</b>									
ES2142995-013	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	0908_SS103_211119	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4043432)</b>									
ES2142698-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143036-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4044214)</b>									
ES2143044-010	0908_MW118_211109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4044214) - continued</b>									
ES2143044-010	0908_MW118_211109	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143044-024	0908_MW108D_211110	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.41	1.34	5.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.21	0.20	0.0	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.20	0.23	10.5	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4044215)</b>									
ES2143044-040	0908_MW247S_211112	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.09	1.12	2.3	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.96	1.03	6.6	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.04	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
ES2143044-047	0908_MW278D_211109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4044600)</b>									
ES2143044-052	0908_MW263D_211109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
ES2143044-059	0908_MW241S_211115	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045737)</b>									
ES2143044-069	0908_MW130D_211115	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045737) - continued</b>									
ES2143044-069	0908_MW130D_211115	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4043432)</b>									
ES2142698-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.05	0.06	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		ES2143036-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4044214)</b>									
ES2143044-010	0908_MW118_211109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143044-024	0908_MW108D_211110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.05	0.06	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.33	0.33	0.0	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4044215)</b>									
ES2143044-040	0908_MW247S_211112	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.15	0.17	12.9	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143044-047	0908_MW278D_211109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4044215) - continued</b>									
ES2143044-047	0908_MW278D_211109	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4044600)</b>									
ES2143044-052	0908_MW263D_211109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143044-059	0908_MW241S_211115	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045737)</b>									
ES2143044-069	0908_MW130D_211115	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4043432)</b>									
ES2142698-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143036-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4043432) - continued</b>									
ES2143036-007	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044214)</b>									
ES2143044-010	0908_MW118_211109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-024	0908_MW108D_211110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044215)</b>									
ES2143044-040	0908_MW247S_211112	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044215) - continued</b>									
ES2143044-040	0908_MW247S_211112	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-047	0908_MW278D_211109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044600)</b>									
ES2143044-052	0908_MW263D_211109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-059	0908_MW241S_211115	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4044600) - continued</b>									
ES2143044-059	0908_MW241S_211115	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045737)</b>									
ES2143044-069	0908_MW130D_211115	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739) - continued</b>									
ES2143051-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4043432)</b>									
ES2142698-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143036-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044214)</b>									
ES2143044-010	0908_MW118_211109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-024	0908_MW108D_211110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044214) - continued</b>									
ES2143044-024	0908_MW108D_211110	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044215)</b>									
ES2143044-040	0908_MW247S_211112	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.14	97.3	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-047	0908_MW278D_211109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4044600)</b>									
ES2143044-052	0908_MW263D_211109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143044-059	0908_MW241S_211115	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045737)</b>									
ES2143044-069	0908_MW130D_211115	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045737) - continued</b>									
ES2143044-069	0908_MW130D_211115	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4043432)</b>									
ES2142698-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.14	0.16	13.3	0% - 50%
ES2143036-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4044214)</b>									
ES2143044-010	0908_MW118_211109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2143044-024	0908_MW108D_211110	EP231X: Sum of PFAS	----	0.01	µg/L	2.25	2.21	1.8	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 4044215)</b>									
ES2143044-040	0908_MW247S_211112	EP231X: Sum of PFAS	----	0.01	µg/L	2.50	2.76	9.9	0% - 20%
ES2143044-047	0908_MW278D_211109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4044600)</b>									
ES2143044-052	0908_MW263D_211109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2143044-059	0908_MW241S_211115	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045737)</b>									
ES2143044-069	0908_MW130D_211115	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044984)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	59.0	134	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044984)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	83.0	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	84.6	69.0	133	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.4	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	64.0	136	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649) - continued</b>									
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.7	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044984)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.4	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.1	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.9	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	61.0	139	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.8	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.8	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.6	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044984)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	101	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	86.8	69.2	143	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	69.2	143	

Sub-Matrix: **WATER**

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
	Spike	Spike Recovery (%)	Acceptable Limits (%)



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4043432)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	99.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4043623)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	83.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	75.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	77.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044214)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	94.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.6	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	85.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.8	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044215)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.8	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	83.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	89.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044600)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	95.8	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	83.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045737)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.0	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.0	68.0	131	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045737) - continued</b>									
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	87.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	90.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047000)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	84.0	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	81.8	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	79.4	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4043432)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.6	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.0	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4043623)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	80.7	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	103	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	82.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	74.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	72.6	69.0	133	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4043623) - continued</b>									
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	73.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	75.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.9	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044214)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.2	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	105	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.4	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044215)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.1	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	82.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	92.6	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	79.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	79.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	83.4	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044600)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	80.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	78.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.8	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	94.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044600) - continued</b>									
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	89.6	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045737)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047000)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.0	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	85.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	84.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	85.1	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4043432)</b>									





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4043432) - continued</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	93.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.4	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4043623)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	80.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	84.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.3	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	75.8	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	78.2	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	73.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044214)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	82.2	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.0	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	76.8	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.0	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	91.8	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044215)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	83.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	78.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.8	62.6	147	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044215) - continued</b>									
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.1	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.0	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.4	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044600)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.5	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	96.2	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.8	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045737)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.4	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	73.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.8	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.9	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.5	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>									
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047000)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	73.3	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	72.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.2	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.0	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4043432)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	88.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	98.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	110	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	87.8	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4043623)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	123	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	95.2	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.6	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044214)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.4	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	86.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	106	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	85.8	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044215)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	86.0	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.2	71.4	144	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044600)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	81.4	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	95.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	99.8	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.6	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045737)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	107	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	85.0	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047000)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	76.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	92.2	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	99.2	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044984)</b>							
ES2142995-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	124	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	114	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	108	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	112	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	116	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	108	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	107	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	94.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.4	67.0	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649) - continued</b>							
ES2142974-052	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	86.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.4	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044984)</b>							
ES2142995-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	100	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	115	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	126	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	123	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	128	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	120	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	121	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	125	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	118	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	112	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	98.6	69.0	133
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	79.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	97.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	73.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.4	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044984)</b>							
ES2142995-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	120	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	105	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	114	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	119	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	113	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	123	63.0	144



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044984) - continued</b>							
ES2142995-003	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	124	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	76.6	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	83.2	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	78.8	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044984)</b>							
ES2142995-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	116	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	96.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	128	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	124	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	96.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4043432)</b>							
ES2142698-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	71.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	74.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	69.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	70.8	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044214)</b>							
ES2143044-023	0908_MW172_211110	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	87.6	72.0	130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044214) - continued</b>							
ES2143044-023	0908_MW172_211110	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	92.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	101	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	91.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	91.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044215)</b>							
ES2143044-044	0908_MW278S_211109	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	96.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	83.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	89.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	79.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	84.6	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4044600)</b>							
ES2143044-054	0908_MW263S_211109	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	119	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	98.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	84.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	88.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	91.8	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045737)</b>							
ES2143044-079	0908_MW175D_211116	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	106	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	92.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	81.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	83.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	91.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4043432)</b>							
ES2142698-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.1	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	82.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.0	72.0	129



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4043432) - continued</b>							
ES2142698-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	89.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	86.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	83.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	76.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	80.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.8	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044214)</b>							
ES2143044-023	0908_MW172_211110	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	112	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	108	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	116	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	100	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	100	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	97.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	107	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	101	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	103	71.0	132
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044215)</b>					
ES2143044-044	0908_MW278S_211109	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	98.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	98.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	104	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	93.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	101	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	85.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	92.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.7	71.0	132
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044600)</b>					
ES2143044-054	0908_MW263S_211109	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	102	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.6	71.0	133





Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4044600) - continued</b>									
ES2143044-054	0908_MW263S_211109	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	95.6	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.6	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	90.6	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.2	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	86.6	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.8	71.0	132		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045737)</b>									
ES2143044-079	0908_MW175D_211116	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.2	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	103	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	103	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	121	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	105	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	109	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	118	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	118	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	115	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132		
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4043432)</b>							
		ES2142698-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8			0.625 µg/L	70.2	68.0	141		
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2			0.625 µg/L	82.9	62.6	147		
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7			0.625 µg/L	79.3	66.0	145		



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4043432) - continued</b>							
ES2142698-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	68.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	74.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.6	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044214)</b>							
ES2143044-023	0908_MW172_211110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	100	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.5	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	104	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	108	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044215)</b>							
ES2143044-044	0908_MW278S_211109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	78.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	83.5	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	80.1	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	80.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	99.8	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044600)</b>							
ES2143044-054	0908_MW263S_211109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	96.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	82.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	94.5	66.0	145





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4044600) - continued</b>							
ES2143044-054	0908_MW263S_211109	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	93.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.2	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045737)</b>							
ES2143044-079	0908_MW175D_211116	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	87.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	77.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4043432)</b>							
ES2142698-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	75.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	83.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	98.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	73.2	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044214)</b>							
ES2143044-023	0908_MW172_211110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.6	63.0	143



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044214) - continued</b>							
ES2143044-023	0908_MW172_211110	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	113	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	94.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	80.8	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044215)</b>							
ES2143044-044	0908_MW278S_211109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	84.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	85.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	86.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	91.6	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4044600)</b>							
ES2143044-054	0908_MW263S_211109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	95.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	84.8	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045737)</b>							
ES2143044-079	0908_MW175D_211116	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	85.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	101	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	74.0	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143045

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 29916

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #2

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:30  
Client Requested Due : 03-Dec-2021  
Date

Issue Date : 27-Nov-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143045-001	11-Nov-2021 11:39	0908_MW236S_211111	✓
ES2143045-002	11-Nov-2021 11:26	0908_MW236D_211111	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

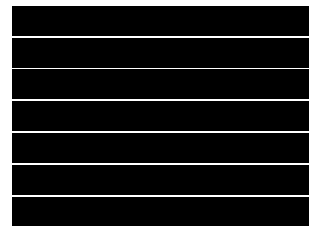
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



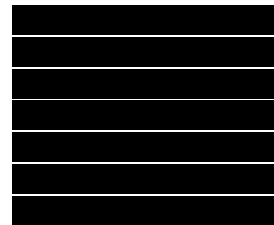
- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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**CHAIN OF CUSTODY**  
 ALS COC#: 29916 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: Resi #2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [REDACTED]  
 DATE TIME: 26/11

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAAS Waters - New Analysis	ALTERNATIVE ANALYSIS	
001	0908_MM236S_211111		11/11/2021 11:39 AM	Water	ALS: 4 Non ALS: 0	No	X		
002	0908_MM236D_211111		11/11/2021 11:26 AM	Water	ALS: 2 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143045**



Telephone : + 61-2-8784 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023160	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023176	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023232	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023265	Grey	No	
002	0908_MMW236D_2111111	HDPE (no PTFE)	20 mL	00352101023241	Grey	No	
002	0908_MMW236D_2111111	HDPE (no PTFE)	20 mL	00352101023166	Grey	No	

Total Bottle Count: ALS: 6, Non ALS: 0







Custody Document for Submissions via ALS Compass App

ALS Use Only

Project: 60612562

Client: Defence

Project Manager:

Phone:

ALS Compass Old Reference: 29916

# Samples:

Sampler:

Phone:

Turnaround Requirements: Standard  Urgent

Special Instructions:

ALS Use Only	YES	NO	N/A
Custody seal intact?			
Free ice / frozen ice bricks upon receipt?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	N/A
Random sample temperature on receipt?		35	°C

Custody:			
Relinquished by:	Received by:	Relinquished by:	Received by:
[Redacted]	[Signature]	[Signature]	[Redacted]
Date / Time:	Date / Time:	Date / Time:	Date / Time:
26.11.21 1230	26/11/21 12:36	26/11/21 17:00	20/11/21 3:30pm



**ALS** **CHAIN OF CUSTODY**  
 ALS Laboratory: ES Sydney  
 COC#: 29916

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [REDACTED]  
DATE TIME: 26/11

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE DETAILS						ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMW236S_2111111		11/11/2021 11:39 AM	Water	ALS: 4 Non ALS: 0	No	X	
002	0908_MMW236D_2111111		11/11/2021 11:26 AM	Water	ALS: 2 Non ALS: 0	No	X	

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143045**



Telephone : - 61-2-6784 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFAASOMP

SITE: Resi #2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023160	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023176	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023232	Grey	No	
001	0908_MMW236S_2111111	HDPE (no PTFE)	20 mL	00352101023265	Grey	No	
002	0908_MMW236D_2111111	HDPE (no PTFE)	20 mL	00352101023241	Grey	No	
002	0908_MMW236D_2111111	HDPE (no PTFE)	20 mL	00352101023166	Grey	No	

Total Bottle Count: ALS: 6, Non ALS: 0



Custody Document for Submissions via ALS Compass App

Project: 60612562

Client: Defence

Project Manager  
Phone:

ALS Compass App Reference: 29916

# Samples: \_\_\_\_\_

Sampler:  
Phone:





Turnaround Requirements: Standard

Urgent

Special Instructions:

	ALS Use Only Custody seal intact? YES NO <input checked="" type="checkbox"/> N/A Free ice <input checked="" type="checkbox"/> frozen ice bricks upon receipt? YES NO N/A Random sample temperature on receipt? 35 °C
--	---

Custody:

Relinquished by: 	Received by: 	Relinquished by: 	Received by: 
Date / Time: 26.11.21 1230	Date / Time: 26/11/21 12:36	Date / Time: 26/11/21 17:00	Date / Time: 20/11/21 3:30pm



ALS Use Only

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143045**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 29916  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #2  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:30  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 06-Dec-2021 10:04



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID		0908_MW236S_21111	0908_MW236D_21111	----	----	----
				Sampling date / time		11-Nov-2021 11:39	11-Nov-2021 11:26	----	----	----
Compound	CAS Number	LOR	Unit	ES2143045-001	ES2143045-002	-----	-----	-----	-----	-----
				Result	Result	---	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>										
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>										
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>										
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236S_21111 1	0908_MW236D_21111 1	----	----	----
Sampling date / time				11-Nov-2021 11:39	11-Nov-2021 11:26	----	----	----
Compound	CAS Number	LOR	Unit	ES2143045-001 Result	ES2143045-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	93.5	----	----	----
13C8-PFOA	----	0.02	%	95.9	98.3	----	----	----





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143045	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #2	Issue Date	: 06-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_211111,	0908_MW236D_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✔	03-Dec-2021	10-May-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_211111,	0908_MW236D_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✔	03-Dec-2021	10-May-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_211111,	0908_MW236D_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✔	03-Dec-2021	10-May-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_211111,	0908_MW236D_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✔	03-Dec-2021	10-May-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_211111,	0908_MW236D_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✔	03-Dec-2021	10-May-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143045

Page : 1 of 4

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 29916

Issue Date : 06-Dec-2021

Sampler : [REDACTED]

Site : Resi #2

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047000)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	84.0	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	81.8	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	79.4	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047000)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.0	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	85.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	84.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	85.1	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047000)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	73.3	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	72.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.2	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.0	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047000)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	76.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	92.2	67.0	138	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047000) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	99.2	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143046

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone : +61 2 8784 8555
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1

Page : 1 of 3
Quote number : ES2021AECOMAU0024 (SY/139/19 v4 60612562\_2.1)

C-O-C number : 29938

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #1

Sampler :

Dates

Date Samples Received : 26-Nov-2021 12:36
Client Requested Due Date : 03-Dec-2021

Issue Date : 27-Nov-2021
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes :
Receipt Detail :

Security Seal : Not Available
Temperature : 3.5°C - Ice present
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please direct any queries you have regarding this work order to the above ALS laboratory contact.
Analytical work for this work order will be conducted at ALS Sydney.
Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143046-001	11-Nov-2021 09:36	0908_MW238D_211111	✓
ES2143046-002	11-Nov-2021 09:49	0908_MW238S_211111	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

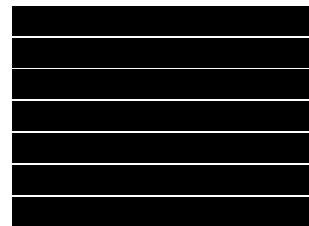
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW238D_211111		11/11/2021 09:36 AM	Water	ALS: 4 Non ALS: 0	No	X		
002	0908_MW238S_211111		11/11/2021 09:49 AM	Water	ALS: 4 Non ALS: 0	No	X		

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143046**



Telephone - 01-26794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: XXXXXXXXXX  
 PRIMARY SAMPLER: XXXXXXXXXX

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: XXXXXXXXXX SAMPLER MOBILE: XXXXXXXXXX  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW238D_211111	HDPE (no PTFE)	20 mL	00352101023235	Grey	No	
001	0908_MW238D_211111	HDPE (no PTFE)	20 mL	00352101023333	Grey	No	
001	0908_MW238D_211111	HDPE (no PTFE)	20 mL	00352101023194	Grey	No	
001	0908_MW238D_211111	HDPE (no PTFE)	20 mL	00352101023121	Grey	No	
002	0908_MW238S_211111	HDPE (no PTFE)	20 mL	00352101023364	Grey	No	
002	0908_MW238S_211111	HDPE (no PTFE)	20 mL	00352101023293	Grey	No	
002	0908_MW238S_211111	HDPE (no PTFE)	20 mL	00352101023367	Grey	No	
002	0908_MW238S_211111	HDPE (no PTFE)	20 mL	00352101023342	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 60612562

Client: Defence

Project Manager:  
Phone:

ALS Compass COC Reference: 291938

# Samples: 2

Sampler:  
Phone:

Turnaround Requirements: Standard

2 Urgent

Special Instructions:

	ALS Use Only Custody seal intact? YES NO <u>N/A</u> <input checked="" type="checkbox"/> Free ice / frozen ice bricks upon receipt? YES NO N/A Random sample temperature on receipt? <u>3.5</u> °C
--	--

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
 Date / Time: <u>26.11.21 1230</u>	 Date / Time: <u>26/11/21 12:36</u>	 Date / Time: <u>26/11/21 17:00</u>	 Date / Time: <u>26/11/21 7:40 pm</u>

ALS Use Only

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143046**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 29938  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #1  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 03-Dec-2021 18:20



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_21111	0908_MW238S_21111	----	----	----
				1	1	----	----	----
				11-Nov-2021 09:36	11-Nov-2021 09:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2143046-001	ES2143046-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_21111 1	0908_MW238S_21111 1	----	----	----
Sampling date / time				11-Nov-2021 09:36	11-Nov-2021 09:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2143046-001 Result	ES2143046-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	107	86.4	----	----	----
13C8-PFOA	----	0.02	%	100	84.5	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143046	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #1	Issue Date	: 03-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143118--064	Anonymous	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143118--064	Anonymous	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW238S_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✓	03-Dec-2021	10-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_MW238D_211111	11-Nov-2021	02-Dec-2021	10-May-2022	✓	02-Dec-2021	10-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW238S_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✓	03-Dec-2021	10-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_MW238D_211111	11-Nov-2021	02-Dec-2021	10-May-2022	✓	02-Dec-2021	10-May-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW238S_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✓	03-Dec-2021	10-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_MW238D_211111	11-Nov-2021	02-Dec-2021	10-May-2022	✓	02-Dec-2021	10-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW238S_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✓	03-Dec-2021	10-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_MW238D_211111	11-Nov-2021	02-Dec-2021	10-May-2022	✓	02-Dec-2021	10-May-2022	✓

Page : 3 of 5  
 Work Order : ES2143046  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231P: PFAS Sums</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW238S_211111	11-Nov-2021	01-Dec-2021	10-May-2022	✓	03-Dec-2021	10-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW238D_211111	11-Nov-2021	02-Dec-2021	10-May-2022	✓	02-Dec-2021	10-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	37	10.81	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	37	5.41	5.00	✔	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143046

Page : 1 of 11

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 29938

Issue Date : 03-Dec-2021

Sampler : [REDACTED]

Site : Resi #1

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4047739)</b>									
ES2143046-001	0908_MW238D_211111	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4047739) - continued</b>											
ES2143118-065	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>											
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit		
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit				
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4047739)</b>											
ES2143046-001	0908_MW238D_211111	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		ES2143118-065	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit		



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4047739) - continued</b>									
ES2143118-065	Anonymous	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4047739)</b>									
ES2143046-001	0908_MW238D_211111	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4047739) - continued</b>									
ES2143046-001	0908_MW238D_211111	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4047739)</b>									
ES2143046-001	0908_MW238D_211111	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4047739) - continued</b>									
ES2143046-001	0908_MW238D_211111	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143118-065	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4047739)</b>									
ES2143046-001	0908_MW238D_211111	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.6	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	93.4	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	89.6	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	113	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739) - continued</b>								
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047739)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	107	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047739)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	113	71.4	144



## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>						
ES2143046-002	0908_MW238S_211111	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0 142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047739)</b>						
ES2143118-064	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.8	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	87.4	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.0	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	82.8	53.0 142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>						
ES2143046-002	0908_MW238S_211111	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0 130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0 129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0 133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0 134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0 144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0 132
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739)</b>				
ES2143118-064	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	86.2	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	125	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	130	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	124	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	121	69.0 130



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739) - continued</b>							
ES2143118-064	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	118	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	115	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	111	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.3	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>							
ES2143046-002	0908_MW238S_211111	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047739)</b>							
ES2143118-064	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	88.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	88.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	103	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	0908_MW238S_211111	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047739)</b>							
ES2143118-064	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	85.2	63.0	143



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047739) - continued</b>							
ES2143118-064	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.0	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143047

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 30000

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #3

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:36  
Client Requested Due : 03-Dec-2021  
Date

Issue Date : 27-Nov-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143047-001	12-Nov-2021 11:12	0908_MW231D_211112	✓
ES2143047-002	12-Nov-2021 11:04	0908_MW231S_211112	✓
ES2143047-003	12-Nov-2021 10:39	0908_POT382_211112	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
Email  
Email  
Email  
Email  
Email  
Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

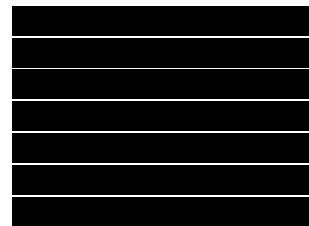
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFAASOMP

SITE: Res1 #3  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

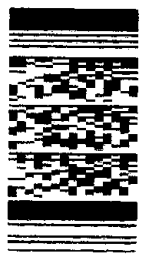
TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS				ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMW231D_211112		12/1/2021 11:12 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0908_MMW231S_211112		12/1/2021 11:04 AM	Water	ALS: 2 Non ALS: 0	No	X		
003	0908_POT382_211112		12/1/2021 10:39 AM	Water	ALS: 2 Non ALS: 0	No	X		

Telephone + 61-2-8784 8555



Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143047**



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: Resi #3

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MM/231D_211112	HDPE (no PTFE)	20 mL	00352101023269	Grey	No	
001	0908_MM/231D_211112	HDPE (no PTFE)	20 mL	00352101023250	Grey	No	
002	0908_MM/231S_211112	HDPE (no PTFE)	20 mL	00352101023301	Grey	No	
002	0908_MM/231S_211112	HDPE (no PTFE)	20 mL	00352101023349	Grey	No	
003	0908_POT382_211112	HDPE (no PTFE)	20 mL	00352101006772	Grey	No	
003	0908_POT382_211112	HDPE (no PTFE)	20 mL	00352101051058	Grey	No	

Total Bottle Count: ALS: 6, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 6062562 Client: Defence

Project Manager  
Phone:

Sampler:  
Phone:

ALS Compass COC Reference: 30000

# Samples: 1

Turnaround Requirements: Standard X Urgent

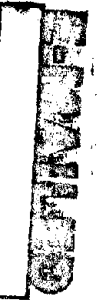
ALS Use Only

Special Instructions:

ALS Use Only	ALS Use Only
Custody seal intact?	YES NO <input checked="" type="radio"/> N/A
Free ice Frozen ice bricks upon receipt?	<input checked="" type="radio"/> YES <input type="radio"/> NO N/A
Random sample temperature on receipt?	<u>35</u> °C

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
<p><i>CM</i></p> <p>Date / Time: <u>26.11.21 1230</u></p>	<p><i>[Signature]</i></p> <p>Date / Time: <u>26.11.21 12:36</u></p>	<p><i>[Signature]</i></p> <p>Date / Time: <u>26.11.21 17:00</u></p>	<p><i>[Signature]</i></p> <p>Date / Time: <u>26/11/21 2:40 PM</u></p>



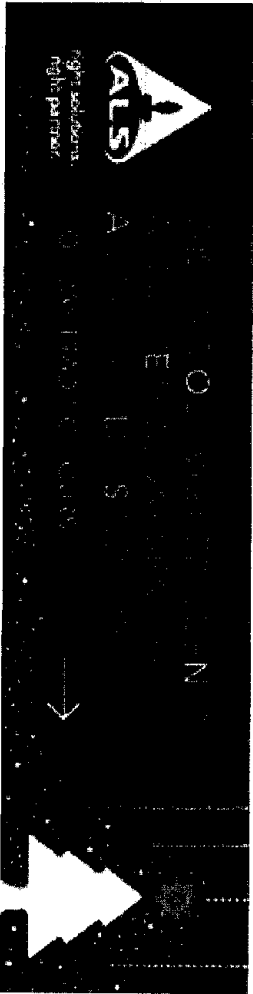
Client Services Officer, Environmental  
Sydney



Subscribe     

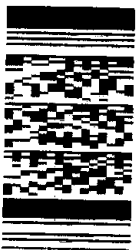
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Environmental Division  
Sydney  
Work Order Reference  
**ES2143047**



Telephone : + 61-2-8784 8656

Thanks for sending these photos. They must have been missed in the final court that was done before submitting.

Please could you action as listed below? And could you also send the Esdat format SRN so I can do an in-depth check for time stamps and labels against my records please?

LC121

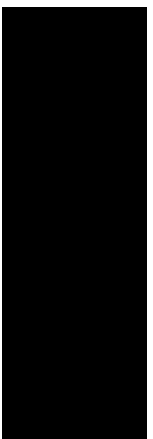
Unfortunately none of those resolve our missing sample #023 (0908\_SW081\_211117). I will check again on our end to see if it can be located.

Label	Bottle Date	Bottle Barcode	Action
MW134I	18/11/2021	00352101023258	Please add as new sampled to work order ES2143044. Date time as 18/11/21 09:23 AM. Analysis as EP231X. To re-issue SRN, and this email request
MW134I	18/11/2021	00352101023118	Please add as new sampled to work order ES2143044. Date time as 18/11/21 09:23 AM. Analysis as EP231X. To re-issue SRN, and this email request
MW231S	12/11/2021	00352101023329	Please add to existing sample (ES2143047-002) in work order ES2143047 as extra bottle. All details as per logged sample. Extra bottle collected for
MW260S	12/11/2021	00352101023131	Please add as new sampled to work order ES2143044. Date time as 12/11/21 16:10. Analysis as EP231X. To re-issue SRN, and this email request
MW260S	12/11/2021	00352101023253	Please add as new sampled to work order ES2143044. Date time as 12/11/21 16:10. Analysis as EP231X. To re-issue SRN, and this email request

*Add to work order*

Thank you for your assistance on this.

Regards,

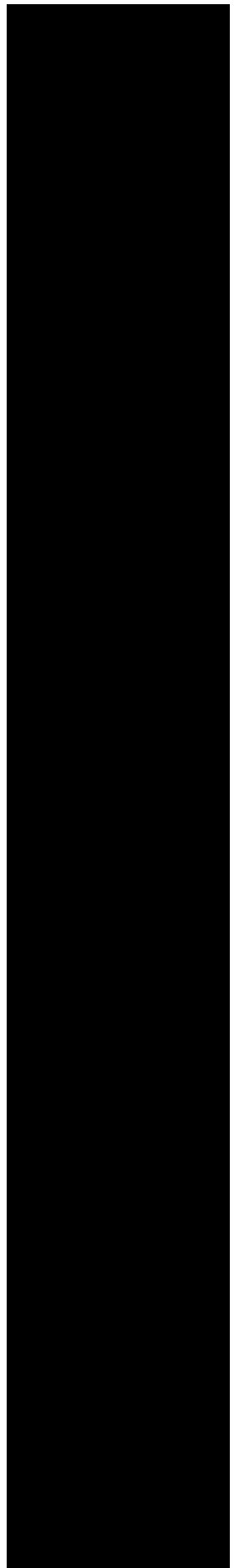


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I'm sorry to hear about this, checking the scanning again the attached have not gone through but came in with the same work. Could you please advise if any of the attached may be relating to these missing samples?

Best regards,



Client Services Officer, Environmental  
Sydney

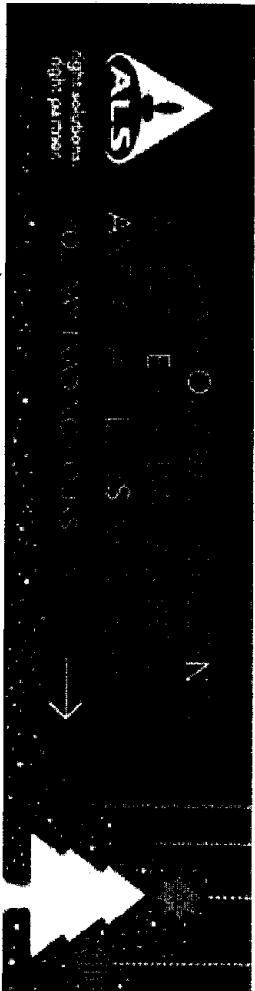


T +61 2 8784 8555 D +61 2 8784 8509  
E +61 2 8784 8500

[jason.dighton@alsglobal.com](mailto:jason.dighton@alsglobal.com)  
277-289 Woodpark Road  
Smithfield NSW 2164 AUSTRALIA



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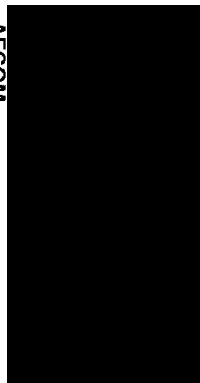
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[www.alsglobal.com](http://www.alsglobal.com)

For this work order, on top of the changes already discussed in attached email chain, can you please have the team double check sample #023 (0908\_SW081\_211117) which is marked as not received for this batch?

Can and I definitely collected this one and we believe we submitted all samples. There were many work orders in the same eskies, so maybe it was grouped with one of this other ones below?

0908\_PFA5OMP batches from November: ES2143044, ES2143045, ES2143046, ES2143047, ES2143048, ES2143049, ES2143050, ES2143051, ES2143052, ES2143053 and ES2143123.

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_SD001_211119		16/11/2021 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
020	0908_SD007_211118		16/11/2021 08:39 PM	Soil	ALS: 1 Non ALS: 0	No	X			
021	0908_QC116_211118		16/11/2021 03:40 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0908_SW007_211118		16/11/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0908_SW001_211117		17/11/2021 10:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
024	0908_SD081_211117		17/11/2021 10:42 AM	Soil	ALS: 1 Non ALS: 0	No	X			



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**From:** [angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com) <[angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com)>  
**Sent:** Saturday, 27 November 2021 1:17 PM

**Subject:** [EXTERNAL] SRN for ALS Workorder : ES2143123 | Your Reference: NSW\_0908\_PFASOMP



# **Deliverables for ALS Workorder ES2143123**

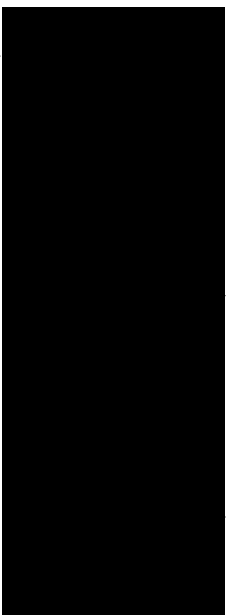
**Project: NSW\_0908\_PFASOMP**

Dear JESSICA ROY,

Please find enclosed the following deliverables for **ES2143123**:

- [ES2143123\\_0\\_SRN\\_211127131702.pdf](#)

Report Recipients



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RIGHT SOLUTIONS : RIGHT PARTNER



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143047**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30000  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #3  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 3  
**No. of samples analysed** : 3

**Page** : 1 of 7  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 03-Dec-2021 18:22



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_21111 2	0908_MW231S_21111 2	----	----	----
Sampling date / time				12-Nov-2021 11:12	12-Nov-2021 11:04	----	----	----
Compound	CAS Number	LOR	Unit	ES2143047-001 Result	ES2143047-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.02</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_21111 2	0908_MW231S_21111 2	----	----	----
Sampling date / time				12-Nov-2021 11:12	12-Nov-2021 11:04	----	----	----
Compound	CAS Number	LOR	Unit	ES2143047-001 Result	ES2143047-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.04</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.04</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.04</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.3</b>	<b>96.9</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>91.9</b>	<b>86.5</b>	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT382\_21111  
 2

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Sampling date / time

12-Nov-2021 10:39

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Compound	CAS Number	LOR	Unit
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ES2143047-003

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT382\_21111  
 2

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Sampling date / time

12-Nov-2021 10:39

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Compound

CAS Number

LOR

Unit

ES2143047-003

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	90.0	----	----	----	----
13C8-PFOA	----	0.02	%	91.6	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143047	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #3	Issue Date	: 03-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 3
Order number	: 60612562_2.1	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**





## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_211112, 0908_POT382_211112	0908_MW231S_211112,	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	11-May-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_211112, 0908_POT382_211112	0908_MW231S_211112,	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	11-May-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_211112, 0908_POT382_211112	0908_MW231S_211112,	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	11-May-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_211112, 0908_POT382_211112	0908_MW231S_211112,	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	11-May-2022	✔
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_211112, 0908_POT382_211112	0908_MW231S_211112,	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	11-May-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143047

Page : 1 of 7

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30000

Issue Date : 03-Dec-2021

Sampler : [REDACTED]

Site : Resi #3

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 3

No. of samples analysed : 3



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>						
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0 142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>						
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0 130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0 129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0 133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0 134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0 144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0 132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>				
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0 137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0 141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6 147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0 145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6 145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0 136



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143048

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 30001

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #4

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:36  
Client Requested Due : 03-Dec-2021  
Date

Issue Date : 02-Dec-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2143048-002	12-Nov-2021 12:15	0908_SD019_211112	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143048-001	12-Nov-2021 12:16	0908_SW019_211112	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email

[Redacted]

[Redacted]

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

[Redacted]

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESDat (ESRN\_ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: Resi #4

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY: \_\_\_\_\_  
 DATE TIME: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_  
 DATE TIME: \_\_\_\_\_

RELINQUISHED BY: \_\_\_\_\_  
 DATE TIME: \_\_\_\_\_

RECEIVED BY: \_\_\_\_\_  
 DATE TIME: \_\_\_\_\_

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

CONTACT PH: \_\_\_\_\_  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_SW019_211112		12/11/2021 12:16 PM	Water	ALS: 3 Non ALS: 0	No	PFAS Waters - New Analysis X	
002	0908_SDD19_211112		12/11/2021 12:56 PM	Soil	ALS: 1 Non ALS: 0	No	PFAS Soil - New Analysis SOIL X	

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143048**



Telephone: + 61-2-8784 8556

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #4

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
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EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody/Seal Intact? Yes No N/A  
 Free ice / Frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW019_211112	HDPE (no PTFE)	20 mL	00352101023302	Grey	No	
001	0908_SW019_211112	HDPE (no PTFE)	20 mL	00352101023168	Grey	No	
001	0908_SW019_211112	HDPE (no PTFE)	20 mL	00352101047317	Grey	No	
002	0908_SD019_211112	HDPE Soil Jar	200 mL	00621019053991	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

ALS Use Only

Project: 60612962 Client: Defence

Project Manager  
Phone:

Sampler:  
Phone:

ALS Compass SGC Reference: 30001





# Samples: \_\_\_\_\_

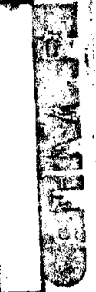
Turnaround Requirements: Standard X Urgent \_\_\_\_\_

Special Instructions:

ALS Use Only	YES	NO	N/A
Custody seal intact?			
Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
Random sample temperature on receipt?	3.5	°C	

Custody:

Relinquished by: 	Received by: 	Relinquished by: 	Received by: 
Date / Time: 26.11.21 1230	Date / Time: 26/11/21 12:36	Date / Time: 26/11/21 17:00	Date / Time: 26/11/21 7:40 PM







CERTIFICATE OF ANALYSIS

Work Order : ES2143048
Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET
SYDNEY NSW, AUSTRALIA 2000
Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 30001
Sampler :
Site : Resi #4
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 7
Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 26-Nov-2021 12:36
Date Analysis Commenced : 29-Nov-2021
Issue Date : 06-Dec-2021 10:04



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results
Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Includes entries for LCMS Coordinator at Sydney Inorganics and Sydney Organics.



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD019_211112	----	----	----	----
		Sampling date / time		12-Nov-2021 12:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143048-002	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	47.0	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0053	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0908_SD019_211112	----	----	----	----
			Sampling date / time	12-Nov-2021 12:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143048-002	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	<b>0.0053</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0053</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0053</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	<b>95.5</b>	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>86.5</b>	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW019\_211112

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Compound		CAS Number	LOR	Unit	Sampling date / time				
					12-Nov-2021 12:16	----	----	----	----
					ES2143048-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)		375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)		2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)		355-46-4	0.01	µg/L	<b>0.03</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)		375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	0.01	µg/L	<b>0.06</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)		335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)		375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)		2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)		307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)		375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)		335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)		375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)		335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)		2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)		307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)		72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)		376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)		754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)		31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)		4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW019_211112	----	----	----	----
		Sampling date / time	12-Nov-2021 12:16	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143048-001	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	<b>0.09</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.09</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.09</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	<b>95.5</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>89.0</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143048	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #4	Issue Date	: 06-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**





### Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>						
<b>HDPE Soil Jar</b> 0908_SD019_211112	----	----	----	02-Dec-2021	26-Nov-2021	6

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>HDPE Soil Jar (EA055)</b> 0908_SD019_211112	12-Nov-2021	----	----	----	02-Dec-2021	26-Nov-2021	*
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

### Matrix: SOIL

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard

### Matrix: WATER

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143048

Page : 1 of 11

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30001

Issue Date : 06-Dec-2021

Sampler : [REDACTED]

Site : Resi #4

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4049672)</b>									
EB2134067-043	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.7	11.3	0% - 20%
ES2142960-049	Anonymous	EA055: Moisture Content	----	0.1	%	14.3	14.7	2.9	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0015	0.0018	16.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649) - continued</b>									
ES2142974-052	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit

<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.4	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.7	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.8	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.8	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.6	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	65.0	137



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	107	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	94.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	86.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.4	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	79.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	97.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	73.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.4	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>					
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	76.6	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	83.2	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	78.8	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134



Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Concentration	Spike Recovery(%)	Acceptable Limits (%)	
				MS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649) - continued</b>							
ES2142974-052	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	96.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Concentration	Spike Recovery(%)	Acceptable Limits (%)	
				MS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143049

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone : +61 2 8784 8555
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1

Page : 1 of 3
Quote number : ES2021AECOMAU0024 (SY/139/19 v4 60612562\_2.1)

C-O-C number : 30003

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #5

Sampler :

Dates

Date Samples Received : 26-Nov-2021 12:36
Client Requested Due Date : 03-Dec-2021

Issue Date : 27-Nov-2021
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes :
Receipt Detail :

Security Seal : Not Available
Temperature : 3.5°C - Ice present
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please direct any queries you have regarding this work order to the above ALS laboratory contact.
Analytical work for this work order will be conducted at ALS Sydney.
Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143049-001	12-Nov-2021 13:30	0908_MW271S_211112	✓
ES2143049-002	12-Nov-2021 13:44	0908_MW271D_211112	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



### Requested Deliverables

#### ACCOUNTS PAYABLE

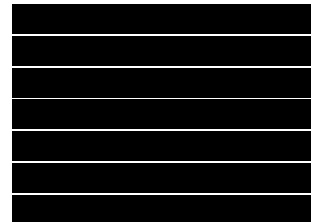
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

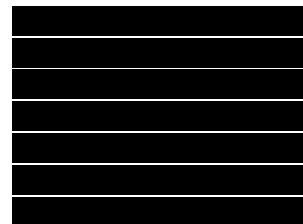
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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**CHAIN OF CUSTODY**  
 ALS COC#: 30003 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: Resi #5

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_MMWZ71S_211112		12/11/2021 01:30 PM	Water	ALS: 2 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
002	0908_MMWZ71D_211112		12/11/2021 01:44 PM	Water	ALS: 2 Non ALS: 0	No		

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143049**



Telephone : + 61-2-8784 8655

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #5

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW271S_211112	HDPE (no PTFE)	20 mL	00352101023211	Grey	No	
001	0908_MW271S_211112	HDPE (no PTFE)	20 mL	00352101023163	Grey	No	
002	0908_MW271D_211112	HDPE (no PTFE)	20 mL	00352101072690	Grey	No	
002	0908_MW271D_211112	HDPE (no PTFE)	20 mL	00352101072603	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence

Project Manager:  
Phone:

ALS Compass Code Reference: 20003

# Samples: \_\_\_\_\_

Sampler:  
Phone:

Turnaround Requirements: Standard X Urgent \_\_\_\_\_

<p>Special Instructions:</p>	<p>ALS Use Only</p> <p>Custody seal intact? YES NO <u>N/A</u></p> <p><u>Free ice</u> / frozen ice bricks upon receipt? YES NO N/A</p> <p>Random sample temperature on receipt? <u>3.5</u> °C</p>
------------------------------	--

**Custody:**

<p>Relinquished by: <u>[Signature]</u></p> <p>Date / Time: <u>26.11.21 12:30</u></p>	<p>Received by: <u>[Signature]</u></p> <p>Date / Time: <u>26/11/21 17:56</u></p>	<p>Relinquished by: <u>[Signature]</u></p> <p>Date / Time: <u>26/11/21 17:00</u></p>	<p>Received by: <u>[Redacted]</u></p> <p>Date / Time: <u>26/11/21 7:40pm</u></p>
--	--	--	--



ALS Use Only

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143049**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30003  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #5  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 03-Dec-2021 17:57



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_21111 2	0908_MW271D_21111 2	----	----	----
Sampling date / time				12-Nov-2021 13:30	12-Nov-2021 13:44	----	----	----
Compound	CAS Number	LOR	Unit	ES2143049-001 Result	ES2143049-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_21111 2	0908_MW271D_21111 2	----	----	----
				12-Nov-2021 13:30	12-Nov-2021 13:44	----	----	----
Compound	CAS Number	LOR	Unit	ES2143049-001	ES2143049-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.02	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	91.5	87.0	----	----	----
13C8-PFOA	----	0.02	%	92.0	91.9	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143049	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #5	Issue Date	: 03-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_211112,	0908_MW271D_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_211112,	0908_MW271D_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_211112,	0908_MW271D_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_211112,	0908_MW271D_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_211112,	0908_MW271D_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	11-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143049

Page : 1 of 7

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30003

Issue Date : 03-Dec-2021

Sampler : [REDACTED]

Site : Resi #5

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Page : 4 of 7  
 Work Order : ES2143049  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>						
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0 142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>						
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0 130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0 129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0 133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0 134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0 144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0 132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>				
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0 137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0 141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6 147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0 145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6 145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0 136



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143050

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 30327

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #6

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:36  
Client Requested Due Date : 03-Dec-2021

Issue Date : 27-Nov-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143050-001	19-Nov-2021 09:30	0908_MW266S_211119	✓
ES2143050-002	19-Nov-2021 09:45	0908_MW266D_211119	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
Email  
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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASCOMP

SITE: Resi #6

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_MMW266S_211119		19/11/2021 09:30 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MMW266D_211119		19/11/2021 09:45 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143050**  
 Telephone: +61-2-8794 8555



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #6

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW266S_211119	HDPE (no PTFE)	20 mL	00352010048158	Grey	No	
001	0908_MW266S_211119	HDPE (no PTFE)	20 mL	00352010048201	Grey	No	
001	0908_MW266S_211119	HDPE (no PTFE)	20 mL	00352010048177	Grey	No	
002	0908_MW266D_211119	HDPE (no PTFE)	20 mL	00352010048147	Grey	No	
002	0908_MW266D_211119	HDPE (no PTFE)	20 mL	00352010028530	Grey	No	
002	0908_MW266D_211119	HDPE (no PTFE)	20 mL	00352010028635	Grey	No	

Total Bottle Count: ALS: 6, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

ALS Use Only

Project: 60612562 Client: Defence

Project Manager  
Phone:

ALS Compass Core Reference: 30527

# Samples:

Sampler:  
Phone:

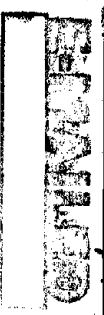
Turnaround Requirements: Standard  Urgent

Special Instructions:

ALS Use Only	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Random sample temperature on receipt?	3 - 5	°C	

**Custody:**

Relinquished by: 	Received by: 	Relinquished by: 	Received by: 
Date / Time: 26.11.21 12:30	Date / Time: 26/11/21 12:36	Date / Time: 26/11/21 17:50	Date / Time: 26/11/21 7:40 PM



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143050**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30327  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #6  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 03-Dec-2021 17:53



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW266S_21111 9	0908_MW266D_21111 9	----	----	----
Sampling date / time				19-Nov-2021 09:30	19-Nov-2021 09:45	----	----	----
Compound	CAS Number	LOR	Unit	ES2143050-001 Result	ES2143050-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.04	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.13	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.08	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW266S_21111 9	0908_MW266D_21111 9	----	----	----
Sampling date / time				19-Nov-2021 09:30	19-Nov-2021 09:45	----	----	----
Compound	CAS Number	LOR	Unit	ES2143050-001 Result	ES2143050-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.26</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.13</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.22</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>88.8</b>	<b>91.6</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>93.8</b>	<b>96.9</b>	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143050	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #6	Issue Date	: 03-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW266S_211119,	0908_MW266D_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW266S_211119,	0908_MW266D_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW266S_211119,	0908_MW266D_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW266S_211119,	0908_MW266D_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW266S_211119,	0908_MW266D_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143050

Page : 1 of 7

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30327

Issue Date : 03-Dec-2021

Sampler : [REDACTED]

Site : Resi #6

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Page : 4 of 7  
 Work Order : ES2143050  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>					
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143051

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 30335

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #7

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:36  
Client Requested Due : 03-Dec-2021  
Date

Issue Date : 27-Nov-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Not Available  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143051-001	19-Nov-2021 10:56	0908_POT085_211119	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
Email  
Email  
Email  
Email  
Email  
Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: Res# #7

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>	<b>RELINQUISHED BY:</b>	<b>RECEIVED BY:</b>
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days	<b>LABORATORY USE ONLY (Circle)</b>
Biohazard info:	Custody Seal Intact? Yes No N/A
	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	Random Sample Temperature on Receipt: C
	Other comments:

SAMPLE DETAILS				ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT085_211119		19/11/2021 10:56 AM	Water	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis WATER

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143051**



Telephone + 61-2-8794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASSOMP

SITE: Resi #7  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT085_211119	HDPE (no PTFE)	20 mL	00352010028479	Grey	No	
001	0908_POT085_211119	HDPE (no PTFE)	20 mL	00352010048150	Grey	No	
001	0908_POT085_211119	HDPE (no PTFE)	20 mL	00352010048120	Grey	No	
001	0908_POT085_211119	HDPE (no PTFE)	20 mL	00352010048204	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0





**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence

Project Manager  
Phone:

Sampler:  
Phone:

ALS Compass Reference: 30335

# Samples: \_\_\_\_\_

Turnaround Requirements: Standard  Urgent \_\_\_\_\_

Special Instructions:

ALS Use Only	
Custody seal intact?	YES NO <u>N/A</u>
<u>Free</u> Ice / frozen ice bricks upon receipt?	YES NO N/A
Random sample temperature on receipt?	<u>3.5</u> °C

Custody:

Relinquished by: <u>AM</u>	Received by: <u>[Signature]</u>	Relinquished by: <u>[Signature]</u>	Received by: <u>[Redacted]</u>
Date / Time: <u>26-11-21 1230</u>	Date / Time: <u>26/11/21 12:36</u>	Date / Time: <u>26/11/21 17:03</u>	Date / Time: <u>26/11/21 7:00 AM</u>

**REMOVED**

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143051**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30335  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #7  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 03-Dec-2021 17:54



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_21111  
9

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Sampling date / time

19-Nov-2021 10:56

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Compound	CAS Number	LOR	Unit
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ES2143051-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_21111  
 9

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Sampling date / time

19-Nov-2021 10:56

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Compound

CAS Number

LOR

Unit

ES2143051-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	96.1	----	----	----	----
13C8-PFOA	----	0.02	%	94.2	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143051	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #7	Issue Date	: 03-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	18-May-2022	✔





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143051

Page : 1 of 7

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30335

Issue Date : 03-Dec-2021

Sampler : [REDACTED]

Site : Resi #7

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 1

No. of samples analysed : 1



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	0908_POT085_211119	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143051-001	0908_POT085_211119	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	0908_POT085_211119	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Page : 4 of 7  
 Work Order : ES2143051  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	0908_POT085_211119	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	0908_POT085_211119	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>					
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136



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 Work Order : ES2143051  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143052

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 30339

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #8

Sampler : [REDACTED]

Dates

Date Samples Received : 26-Nov-2021 12:36  
Client Requested Due : 03-Dec-2021  
Date

Issue Date : 27-Nov-2021  
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : ----  
Receipt Detail :

Security Seal : Intact.  
Temperature : 3.5°C - Ice present  
No. of samples received / analysed : 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2143052-006	19-Nov-2021 12:25	0908_SD082_211119	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143052-001	19-Nov-2021 11:21	0908_MW267D_211119	✓
ES2143052-002	19-Nov-2021 11:27	0908_MW267S_211119	✓
ES2143052-003	19-Nov-2021 11:52	0908_MW235S_211119	✓
ES2143052-004	19-Nov-2021 12:08	0908_MW235D_211119	✓
ES2143052-005	19-Nov-2021 12:25	0908_SW082_211119	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



### Requested Deliverables

#### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

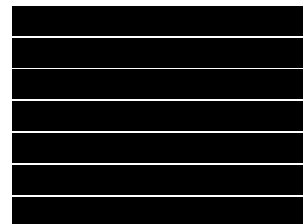
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
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- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
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- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
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- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
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- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #8

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RECEIVED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RELINQUISHED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RECEIVED BY: [REDACTED]  
 DATE TIME: [REDACTED]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW267D_211119		19/11/2021 11:21 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0908_MW267S_211119		19/11/2021 11:27 AM	Water	ALS: 3 Non ALS: 0	No		X		
003	0908_MW236S_211119		19/11/2021 11:52 AM	Water	ALS: 2 Non ALS: 0	No		X		
004	0908_MMW236D_211119		19/11/2021 12:08 PM	Water	ALS: 2 Non ALS: 0	No		X		
005	0908_SW082_211119		19/11/2021 12:25 PM	Water	ALS: 2 Non ALS: 0	No		X		
006	0908_SD082_211119		19/11/2021 12:25 PM	Soil	ALS: 1 Non ALS: 0	No	X			

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143052**  
 Telephone : +61-2-8784 8566



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Res# #8

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW267D_211119	HDPE (no PTFE)	20 mL	00352010048137	Grey	No	
001	0908_MW267D_211119	HDPE (no PTFE)	20 mL	00352010048211	Grey	No	
001	0908_MW267D_211119	HDPE (no PTFE)	20 mL	00352101017658	Grey	No	
002	0908_MW267S_211119	HDPE (no PTFE)	20 mL	00352010048134	Grey	No	
002	0908_MW267S_211119	HDPE (no PTFE)	20 mL	00352101017577	Grey	No	
002	0908_MW267S_211119	HDPE (no PTFE)	20 mL	00352010048049	Grey	No	
003	0908_MW238S_211119	HDPE (no PTFE)	20 mL	00352010028755	Grey	No	
003	0908_MW238S_211119	HDPE (no PTFE)	20 mL	00352010048148	Grey	No	
004	0908_MW239D_211119	HDPE (no PTFE)	20 mL	00352010028798	Grey	No	
004	0908_MW239D_211119	HDPE (no PTFE)	20 mL	00352010048089	Grey	No	
005	0908_SW082_211119	HDPE (no PTFE)	20 mL	00352010048020	Grey	No	
005	0908_SW082_211119	HDPE (no PTFE)	20 mL	00352010028588	Grey	No	
006	0908_SD082_211119	HDPE Soil Jar	200 mL	00621019053936	Grey	No	

Total Bottle Count: ALS: 13, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 606125G2 Client: Defence

Project Manager  
Phone:

ALS Compass COC Reference: 30339 # Samples: \_\_\_\_\_

Sampler:  
Phone:

Turnaround Requirements: Standard  Urgent \_\_\_\_\_

**Special Instructions:**

ALS Use Only	ALS Use Only
Custody seal intact?	YES NO <input checked="" type="radio"/> N/A
Free ice / frozen ice bricks upon receipt?	YES NO N/A
Random sample temperature on receipt?	3.5 °C

**Custody:**

Relinquished by:	Received by:	Relinquished by:	Received by:
Relinquished by: <u>[Signature]</u> Date / Time: <u>26-11-21 12:30</u>	Received by: <u>[Signature]</u> Date / Time: <u>26/11/21 12:30</u>	Relinquished by: <u>[Signature]</u> Date / Time: <u>26/11/21 17:00</u>	Received by: <u>[Redacted]</u> Date / Time: <u>26/11/21 7:46 PM</u>



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143052**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30339  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : Resi #8  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 6  
**No. of samples analysed** : 6

**Page** : 1 of 9  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 29-Nov-2021  
**Issue Date** : 06-Dec-2021 10:04



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW267D_21111 9	0908_MW267S_21111 9	0908_MW235S_21111 9	0908_MW235D_21111 9	----
Sampling date / time				19-Nov-2021 11:21	19-Nov-2021 11:27	19-Nov-2021 11:52	19-Nov-2021 12:08	----
Compound	CAS Number	LOR	Unit	ES2143052-001 Result	ES2143052-002 Result	ES2143052-003 Result	ES2143052-004 Result	----- ----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW267D_21111 9	0908_MW267S_21111 9	0908_MW235S_21111 9	0908_MW235D_21111 9	----
Sampling date / time				19-Nov-2021 11:21	19-Nov-2021 11:27	19-Nov-2021 11:52	19-Nov-2021 12:08	----
Compound	CAS Number	LOR	Unit	ES2143052-001 Result	ES2143052-002 Result	ES2143052-003 Result	ES2143052-004 Result	----- ----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	83.5	90.2	96.6	88.6	----
13C8-PFOA	----	0.02	%	92.0	86.9	94.2	89.0	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD082_211119	----	----	----	----
		Sampling date / time		19-Nov-2021 12:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143052-006	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>41.6</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0026</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<b>0.0003</b>	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0253</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0004</b>	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<b>0.0003</b>	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<b>0.0002</b>	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID	0908_SD082_211119					
		Sampling date / time	19-Nov-2021 12:25					
Compound	CAS Number	LOR	Unit	ES2143052-006	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0291	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0279	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0282	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	88.5	----	----	----	----
13C8-PFOA	----	0.0002	%	91.0	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW082_211119	----	----	----	----
		Sampling date / time		19-Nov-2021 12:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143052-005	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.12	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.13	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.22	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.08	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.31	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.33	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW082\_211119

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			Sampling date / time	19-Nov-2021 12:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143052-005	-----	-----	-----	-----
				Result	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	3.37	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.53	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	3.16	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	86.3	----	----	----	----
13C8-PFOA	----	0.02	%	87.8	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143052	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #8	Issue Date	: 06-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 6
Order number	: 60612562_2.1	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>HDPE Soil Jar (EA055)</b> 0908_SD082_211119	19-Nov-2021	----	----	----	02-Dec-2021	03-Dec-2021	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD082_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD082_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD082_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD082_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD082_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW267D_211119, 0908_MW235S_211119, 0908_SW082_211119	0908_MW267S_211119, 0908_MW235D_211119,	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW267D_211119, 0908_MW235S_211119, 0908_SW082_211119	0908_MW267S_211119, 0908_MW235D_211119,	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW267D_211119, 0908_MW235S_211119, 0908_SW082_211119	0908_MW267S_211119, 0908_MW235D_211119,	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW267D_211119, 0908_MW235S_211119, 0908_SW082_211119	0908_MW267S_211119, 0908_MW235D_211119,	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW267D_211119, 0908_MW235S_211119, 0908_SW082_211119	0908_MW267S_211119, 0908_MW235D_211119,	19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	18-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

### Matrix: SOIL

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard

### Matrix: WATER

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143052

Page : 1 of 11

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30339

Issue Date : 06-Dec-2021

Sampler : [REDACTED]

Site : Resi #8

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 6

No. of samples analysed : 6



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4049672)</b>									
EB2134067-043	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.7	11.3	0% - 20%
ES2142960-049	Anonymous	EA055: Moisture Content	----	0.1	%	14.3	14.7	2.9	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0015	0.0018	16.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649) - continued</b>									
ES2142974-052	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.4	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.7	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.8	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.8	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.6	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	65.0	137



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	107	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	94.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	86.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.4	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	79.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	97.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	73.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.4	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>					
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	76.6	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	83.2	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	78.8	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134



Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
				Low	High		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649) - continued</b>							
ES2142974-052	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	96.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
				Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143053

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone : +61 2 8784 8555
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1

Page : 1 of 3
Quote number : ES2021AECOMAU0024 (SY/139/19 v4 60612562\_2.1)

C-O-C number : 30742

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Resi #9

Sampler :

Dates

Date Samples Received : 26-Nov-2021 12:36
Client Requested Due Date : 03-Dec-2021

Issue Date : 27-Nov-2021
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes :
Receipt Detail :

Security Seal : Not Available
Temperature : 3.5°C - Ice present
No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please direct any queries you have regarding this work order to the above ALS laboratory contact.
Analytical work for this work order will be conducted at ALS Sydney.
Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2143053-001	26-Nov-2021 08:44	0908_SD326_211126	✓	✓
ES2143053-002	26-Nov-2021 08:45	0908_SD254_211126	✓	✓
ES2143053-003	26-Nov-2021 08:50	0908_SD255_211126	✓	✓
ES2143053-004	26-Nov-2021 08:15	0908_SD259_211126	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143053-005	26-Nov-2021 08:15	0908_SW259_211126	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: Resi #9

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SD326_211126		26/11/2021 08:44 AM	Soil	ALS: 1 Non ALS: 0	No	X			
002	0908_SD254_211126		26/11/2021 08:45 AM	Soil	ALS: 1 Non ALS: 0	No	X			
003	0908_SD255_211126		26/11/2021 08:50 AM	Soil	ALS: 1 Non ALS: 0	No	X			
004	0908_SD259_211126		26/11/2021 08:15 AM	Soil	ALS: 1 Non ALS: 0	No	X			
005	0908_SW259_211126		26/11/2021 08:15 AM	Water	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143053**  
 Telephone: 61-2-9794 8556



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: Resi #9

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SD326_211126	HDPE Soil Jar	200 mL	00621019053844	Grey	No	
002	0908_SD254_211126	HDPE Soil Jar	200 mL	00621019053863	Grey	No	
003	0908_SD255_211126	HDPE Soil Jar	200 mL	00621019053980	Grey	No	
004	0908_SD259_211126	HDPE Soil Jar	200 mL	00621019053961	Grey	No	
005	0908_SW259_211126	HDPE (no PTFE)	20 mL	00352010028609	Grey	No	
005	0908_SW259_211126	HDPE (no PTFE)	20 mL	00352010022779	Grey	No	
005	0908_SW259_211126	HDPE (no PTFE)	20 mL	00352010028675	Grey	No	
005	0908_SW259_211126	HDPE (no PTFE)	20 mL	00352010022421	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence

Project Manager  
Phone:

Sampler:  
Phone:

ALS Compass DOC Reference: 30747

# Samples:

Turnaround Requirements: Standard X Urgent

Special Instructions:

ALS Use Only	Custody seal intact?	YES NO
	Free ice frozen ice bricks upon receipt?	YES NO N/A
	Random sample temperature on receipt?	3.5 °C

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
 Date / Time: 26.11.21 1230	 Date / Time: 26/11/21 12:36	 Date / Time: 26/11/21 17:00	 Date / Time: 26/11/21 7:40 PM



ALS Use Only



CERTIFICATE OF ANALYSIS

Work Order : ES2143053
Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET
SYDNEY NSW, AUSTRALIA 2000
Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 30742
Sampler :
Site : Resi #9
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 7
Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 26-Nov-2021 12:36
Date Analysis Commenced : 29-Nov-2021
Issue Date : 06-Dec-2021 09:05



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results
Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Includes entries for LCMS Coordinator at Sydney Inorganics and Sydney Organics.



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD326_211126	0908_SD254_211126	0908_SD255_211126	0908_SD259_211126	----
		Sampling date / time		26-Nov-2021 08:44	26-Nov-2021 08:45	26-Nov-2021 08:50	26-Nov-2021 08:15	----
Compound	CAS Number	LOR	Unit	ES2143053-001	ES2143053-002	ES2143053-003	ES2143053-004	-----
				Result	Result	Result	Result	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	20.3	49.0	51.9	19.5	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0006	0.0041	0.0007	0.0004	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.0006	<0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0133	0.0416	0.0154	0.0006	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0002	0.0004	<0.0002	<0.0002	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0002	0.0006	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.0003	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0015	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.0003	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0003	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD326_211126	0908_SD254_211126	0908_SD255_211126	0908_SD259_211126	----
Sampling date / time				26-Nov-2021 08:44	26-Nov-2021 08:45	26-Nov-2021 08:50	26-Nov-2021 08:15	----	----
Compound	CAS Number	LOR	Unit	ES2143053-001	ES2143053-002	ES2143053-003	ES2143053-004	-----	-----
				Result	Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0143	0.0494	0.0164	0.0010	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0139	0.0457	0.0161	0.0010	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0141	0.0481	0.0161	0.0010	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	97.0	97.0	82.5	96.0	----	----
13C8-PFOA	----	0.0002	%	97.0	89.0	89.0	100	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW259_211126	----	----	----	----
		Sampling date / time		26-Nov-2021 08:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143053-005	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW259_211126		----	----	----	----
		Sampling date / time	26-Nov-2021 08:15		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143053-005	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.62	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.19	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.53	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	84.3	----	----	----	----
13C8-PFOA	----	0.02	%	89.0	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143053	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: Resi #9	Issue Date	: 06-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 5
Order number	: 60612562_2.1	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Moisture Content	3	32	9.38	10.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	----	----	----	02-Dec-2021	10-Dec-2021	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_211126, 0908_SD255_211126,	0908_SD254_211126, 0908_SD259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	10-Jan-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_211126	26-Nov-2021	01-Dec-2021	25-May-2022	✓	03-Dec-2021	25-May-2022	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	3	32	9.38	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143053

Page : 1 of 11

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 29-Nov-2021

C-O-C number : 30742

Issue Date : 06-Dec-2021

Sampler : [REDACTED]

Site : Resi #9

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 5

No. of samples analysed : 5



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4049672)</b>									
EB2134067-043	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.7	11.3	0% - 20%
ES2142960-049	Anonymous	EA055: Moisture Content	----	0.1	%	14.3	14.7	2.9	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4049673)</b>									
ES2143085-011	Anonymous	EA055: Moisture Content	----	0.1	%	19.1	17.5	8.8	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0015	0.0018	16.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045649) - continued</b>									
ES2142974-052	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045649) - continued</b>									
ES2143044-103	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045649)</b>									
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143044-103	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	0908_SW259_211126	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.53	0.57	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.66	0.70	7.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	24.6	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739)</b>									
ES2143053-005	0908_SW259_211126	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	0.17	0.0	No Limit



Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045739) - continued</b>									
ES2143053-005	0908_SW259_211126	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739)</b>							
ES2143053-005	0908_SW259_211126	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045739) - continued</b>									
ES2143051-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045739)</b>									
ES2143053-005	0908_SW259_211126	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143051-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4045739)</b>									
ES2143053-005	0908_SW259_211126	EP231X: Sum of PFAS	----	0.01	µg/L	1.62	1.69	4.2	0% - 20%
ES2143051-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.4	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.4	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.7	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.0	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.8	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.8	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.6	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	97.2	65.0	137	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	80.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	81.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	84.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	78.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	77.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.2	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	83.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	107	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	94.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	84.4	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	86.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	86.4	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	79.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	86.4	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	97.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	100	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.6	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	73.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	86.4	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649)</b>					
ES2142974-052	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	91.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	76.6	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	83.2	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	78.8	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045649) - continued</b>							
ES2142974-052	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045649)</b>							
ES2142974-052	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	96.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	83.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	86.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.6	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	84.7	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.0	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045739) - continued</b>							
ES2143046-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045739)</b>							
ES2143046-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	83.8	71.4	144



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143123

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : LEVEL 21 420 GEORGE STREET
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield
NSW Australia 2164

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone : +61 2 8784 8555
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1

Page : 1 of 4
Quote number : ES2021AECOMAU0024 (SY/139/19 v4
60612562\_2.1)

C-O-C number : 30004
Site : WLM\_SW/SD
Sampler :

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 26-Nov-2021 12:36
Client Requested Due Date : 03-Dec-2021

Issue Date : 06-Dec-2021
Scheduled Reporting Date : 03-Dec-2021

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes :
Receipt Detail :

Security Seal : Not Available
Temperature : 3.5°C - Ice present
No. of samples received / analysed : 42 / 41
No. of samples NOT collected : 1

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Sample 0908\_SW081\_211117 was not received due to the following reason: not received
Please direct any queries you have regarding this work order to the above ALS laboratory contact.
Analytical work for this work order will be conducted at ALS Sydney.
Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2143123-002	12-Nov-2021 15:05	0908_SD079_211112		✓	✓
ES2143123-003	15-Nov-2021 12:30	0908_SD060_211115		✓	✓
ES2143123-008	16-Nov-2021 12:25	0908_SD110_211116		✓	✓
ES2143123-010	16-Nov-2021 12:44	0908_SD055_211116		✓	✓
ES2143123-011	16-Nov-2021 12:45	0908_QC109_211116		✓	✓
ES2143123-013	16-Nov-2021 13:05	0908_SD048_211116		✓	✓
ES2143123-014	16-Nov-2021 13:23	0908_SD047_211116		✓	✓
ES2143123-017	16-Nov-2021 14:06	0908_SD108_211116		✓	✓
ES2143123-019	19-Nov-2021 14:30	0908_SD001_211119		✓	✓
ES2143123-020	16-Nov-2021 15:39	0908_SD007_211116		✓	✓
ES2143123-024	17-Nov-2021 10:42	0908_SD081_211117		✓	✓
ES2143123-026	17-Nov-2021 12:06	0908_SD062_211117		✓	✓
ES2143123-027	17-Nov-2021 13:23	0908_SD006_211117		✓	✓
ES2143123-029	17-Nov-2021 13:42	0908_SD009_211117		✓	✓
ES2143123-030	17-Nov-2021 13:43	0908_QC117_211117	✓		
ES2143123-032	17-Nov-2021 14:30	0908_SD014_211117		✓	✓
ES2143123-034	17-Nov-2021 14:57	0908_SD005_211117		✓	✓
ES2143123-037	17-Nov-2021 15:17	0908_SD024_211117		✓	✓
ES2143123-039	17-Nov-2021 15:51	0908_SD023_211117		✓	✓
ES2143123-041	19-Nov-2021 14:53	0908_QC115_211119		✓	✓
ES2143123-043	17-Nov-2021 15:51	0908_QC113_211117		✓	✓
ES2143123-045	15-Nov-2021 11:50	0908_SD059_211115		✓	✓



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143123-001	12-Nov-2021 15:10	0908_SW079_211112	✓
ES2143123-004	15-Nov-2021 12:24	0908_SW060_211115	✓
ES2143123-007	16-Nov-2021 12:16	0908_SW110_211116	✓
ES2143123-009	16-Nov-2021 12:34	0908_SW055_211116	✓
ES2143123-012	16-Nov-2021 13:03	0908_SW048_211116	✓
ES2143123-015	16-Nov-2021 13:29	0908_SW047_211116	✓
ES2143123-016	16-Nov-2021 14:06	0908_SW108_211116	✓
ES2143123-018	19-Nov-2021 14:49	0908_SW001_211119	✓
ES2143123-021	16-Nov-2021 15:40	0908_QC116_211116	✓
ES2143123-022	16-Nov-2021 15:41	0908_SW007_211116	✓
ES2143123-025	17-Nov-2021 12:05	0908_SW062_211117	✓
ES2143123-028	17-Nov-2021 13:23	0908_SW006_211117	✓
ES2143123-031	17-Nov-2021 13:43	0908_SW009_211117	✓
ES2143123-033	17-Nov-2021 14:30	0908_SW014_211117	✓
ES2143123-035	17-Nov-2021 14:57	0908_SW005_211117	✓
ES2143123-036	17-Nov-2021 15:16	0908_SW024_211117	✓
ES2143123-038	17-Nov-2021 15:49	0908_SW023_211117	✓
ES2143123-040	19-Nov-2021 14:30	0908_QC114_211119	✓
ES2143123-042	17-Nov-2021 15:49	0908_QC110_211117	✓
ES2143123-044	15-Nov-2021 11:47	0908_SW059_211115	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN\_ESDAT)

Email  
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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN\_ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN\_ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESdat (ESRN\_ESDAT)

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Email



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ESS2021AECOMAU002  
 4

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days			
Biohazard info:			

SAMPLE DETAILS						ANALYSIS REQUIRED			ADDITIONAL INFORMATION	
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SW079_211112		12/11/2021 03:10 PM	Water	ALS: 2 Non ALS: 0	No		X		
002	0908_SD079_211112		12/11/2021 03:10 PM	Soil	ALS: 1 Non ALS: 0	No	X			
003	0908_SD060_211115		15/11/2021 05:38 PM	Soil	ALS: 1 Non ALS: 0	No	X			
004	0908_SW060_211115		15/11/2021 05:40 PM	Water	ALS: 2 Non ALS: 0	No		X		
005	0908_SW059_211115		15/11/2021 05:48 PM	Water	ALS: 2 Non ALS: 0	No		X		
006	0908_SD059_211115		15/11/2021 05:50 PM	Soil	ALS: 1 Non ALS: 0	No	X			
007	0908_SW110_211116		16/11/2021 12:16 PM	Water	ALS: 2 Non ALS: 0	No		X		
008	0908_SD110_211116		16/11/2021 12:25 PM	Soil	ALS: 1 Non ALS: 0	No	X			
009	0908_SW055_211116		16/11/2021 12:34 PM	Water	ALS: 2 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2143123**  
 Telephone : + 61-2-8784 8555



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU002

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days			
Biohazard info:			

SAMPLE DETAILS						ANALYSIS REQUIRED			ADDITIONAL INFORMATION	
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
010	0908_SD055_2111116		16/11/2021 12:44 PM	Soil	ALS: 1 Non ALS: 0	No	X			
011	0908_QC109_2111116		16/11/2021 12:45 PM	Soil	ALS: 1 Non ALS: 0	No	X			
012	0908_SW048_2111116		16/11/2021 01:03 PM	Water	ALS: 2 Non ALS: 0	No		X		
013	0908_SD048_2111116		16/11/2021 01:05 PM	Soil	ALS: 1 Non ALS: 0	No	X			
014	0908_SD047_2111116		16/11/2021 01:23 PM	Soil	ALS: 1 Non ALS: 0	No	X			
015	0908_SW047_2111116		16/11/2021 01:29 PM	Water	ALS: 2 Non ALS: 0	No		X		
016	0908_SW108_2111116		16/11/2021 02:06 PM	Water	ALS: 2 Non ALS: 0	No		X		
017	0908_SD108_2111116		16/11/2021 02:06 PM	Soil	ALS: 1 Non ALS: 0	No	X			
018	0908_SW001_2111119		19/11/2021 02:30 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)	
Biohazard info:		Custody Seal intact?	Yes No N/A
		Free ice / frozen ice bricks present upon receipt?	Yes No N/A
		Random Sample Temperature on Receipt:	C
		Other comments:	

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
019	0908_SDO01_211119		19/11/2021 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
020	0908_SDO07_211116		16/11/2021 03:39 PM	Soil	ALS: 1 Non ALS: 0	No	X			
021	0908_QC116_211116		16/11/2021 03:40 PM	Water	ALS: 2 Non ALS: 0	No		X		
022	0908_SW007_211116		16/11/2021 03:41 PM	Water	ALS: 2 Non ALS: 0	No		X		
023	0908_SW081_211117		17/11/2021 10:38 AM	Water	ALS: 2 Non ALS: 0	No		X		
024	0908_SDO81_211117		17/11/2021 10:42 AM	Soil	ALS: 1 Non ALS: 0	No	X			
025	0908_SW062_211117		17/11/2021 12:05 PM	Water	ALS: 2 Non ALS: 0	No		X		
026	0908_SDO62_211117		17/11/2021 12:06 PM	Soil	ALS: 1 Non ALS: 0	No	X			
027	0908_SDO06_211117		17/11/2021 01:23 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED			ADDITIONAL INFORMATION	
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
028	0908_SW006_211117		17/11/2021 01:23 PM	Water	ALS: 2 Non ALS: 0	No		X		
029	0908_SD009_211117		17/11/2021 01:42 PM	Soil	ALS: 1 Non ALS: 0	No	X			
030	0908_QC117_211117		17/11/2021 01:43 PM	Soil	ALS: 1 Non ALS: 0	Yes	-			
031	0908_SW009_211117		17/11/2021 01:43 PM	Water	ALS: 2 Non ALS: 0	No		X		
032	0908_SD014_211117		17/11/2021 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X			
033	0908_SW014_211117		17/11/2021 02:30 PM	Water	ALS: 4 Non ALS: 0	No		X		
034	0908_SDO05_211117		17/11/2021 02:57 PM	Soil	ALS: 1 Non ALS: 0	No	X			
035	0908_SW005_211117		17/11/2021 02:57 PM	Water	ALS: 2 Non ALS: 0	No		X		
036	0908_SW024_211117		17/11/2021 03:16 PM	Water	ALS: 2 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_SD024_211117		17/11/2021 03:17 PM	Soil	ALS: 1 Non ALS: 0	No	X			
038	0908_SW023_211117		17/11/2021 03:49 PM	Water	ALS: 2 Non ALS: 0	No		X		
039	0908_SD023_211117		17/11/2021 03:51 PM	Soil	ALS: 1 Non ALS: 0	No	X			
040	0908_QC114_211119		19/11/2021 02:30 PM	Water	ALS: 2 Non ALS: 0	No		X		
041	0908_QC115_211119		19/11/2021 02:53 PM	Soil	ALS: 1 Non ALS: 0	No	X			
042	0908_QC110_211117		17/11/2021 03:49 PM	Water	ALS: 2 Non ALS: 0	No		X		
043	0908_QC113_211117		17/11/2021 03:51 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW079_211112	HDPE (no PTFE)	20 mL	00352010022270	Grey	No	
001	0908_SW079_211112	HDPE (no PTFE)	20 mL	00352010022382	Grey	No	
002	0908_SD079_211112	HDPE Soil Jar	200 mL	00621019053911	Grey	No	
003	0908_SDD60_211115	HDPE Soil Jar	200 mL	00621019063882	Grey	No	
004	0908_SW060_211115	HDPE (no PTFE)	20 mL	00352101023203	Grey	No	
004	0908_SW060_211115	HDPE (no PTFE)	20 mL	00352101023361	Grey	No	
005	0908_SW059_211115	HDPE (no PTFE)	20 mL	00352101023287	Grey	No	
005	0908_SW059_211115	HDPE (no PTFE)	20 mL	00352101023142	Grey	No	
006	0908_SDD059_211115	HDPE Soil Jar	200 mL	00621019053906	Grey	No	
007	0908_SW110_211116	HDPE (no PTFE)	20 mL	00352101023339	Grey	No	
007	0908_SW110_211116	HDPE (no PTFE)	20 mL	00352101023207	Grey	No	
008	0908_SDI10_211116	HDPE Soil Jar	200 mL	00620719040433	Grey	No	
009	0908_SW055_211116	HDPE (no PTFE)	20 mL	00352101023151	Grey	No	
009	0908_SW055_211116	HDPE (no PTFE)	20 mL	00352101023277	Grey	No	
010	0908_SDD055_211116	HDPE Soil Jar	200 mL	00620719040356	Grey	No	
011	0908_QC109_211116	HDPE Soil Jar	200 mL	00620719040431	Grey	No	
012	0908_SW048_211116	HDPE (no PTFE)	20 mL	00352101023146	Grey	No	
012	0908_SW048_211116	HDPE (no PTFE)	20 mL	00352101023255	Grey	No	
013	0908_SDD048_211116	HDPE Soil Jar	200 mL	00621019053996	Grey	No	
014	0908_SDD047_211116	HDPE Soil Jar	200 mL	00620719040397	Grey	No	
015	0908_SW047_211116	HDPE (no PTFE)	20 mL	00352101023312	Grey	No	
015	0908_SW047_211116	HDPE (no PTFE)	20 mL	00352101023273	Grey	No	
016	0908_SW108_211116	HDPE (no PTFE)	20 mL	00352101023107	Grey	No	
016	0908_SW108_211116	HDPE (no PTFE)	20 mL	00352101023152	Grey	No	
017	0908_SDI08_211116	HDPE Soil Jar	200 mL	00620719087450	Grey	No	
018	0908_SW001_211119	HDPE (no PTFE)	20 mL	00352010028669	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

ID	Sample ID	Container	Volume	Barcode	Color	Seal Intact	Temp. on Receipt
018	0908_SW001_211119	HDPE (no PTFE)	20 mL	00352010048039	Grey	No	
019	0908_SD001_211119	HDPE Soil Jar	200 mL	00620719040413	Grey	No	
020	0908_SD007_211116	HDPE Soil Jar	200 mL	00620719040390	Grey	No	
021	0908_QC116_211116	HDPE (no PTFE)	20 mL	00352101023149	Grey	No	
021	0908_QC116_211116	HDPE (no PTFE)	20 mL	00352101023285	Grey	No	
022	0908_SW007_211116	HDPE (no PTFE)	20 mL	00352101023135	Grey	No	
022	0908_SW007_211116	HDPE (no PTFE)	20 mL	00352101023337	Grey	No	
023	0908_SW081_211117	HDPE (no PTFE)	20 mL	00352101023343	Grey	No	
023	0908_SW081_211117	HDPE (no PTFE)	20 mL	00352101023103	Grey	No	
024	0908_SDO81_211117	HDPE Soil Jar	200 mL	00620719087471	Grey	No	
025	0908_SW062_211117	HDPE (no PTFE)	20 mL	00352101023217	Grey	No	
025	0908_SW062_211117	HDPE (no PTFE)	20 mL	00352101023392	Grey	No	
026	0908_SD062_211117	HDPE Soil Jar	200 mL	00620719057290	Grey	No	
027	0908_SD006_211117	HDPE Soil Jar	200 mL	00621019053964	Grey	No	
028	0908_SW006_211117	HDPE (no PTFE)	20 mL	00352010025917	Grey	No	
028	0908_SW006_211117	HDPE (no PTFE)	20 mL	00352010025996	Grey	No	
029	0908_SDO09_211117	HDPE Soil Jar	200 mL	00621019053984	Grey	No	
030	0908_QC117_211117	HDPE Soil Jar	200 mL	00621019053857	Grey	No	
031	0908_SW009_211117	HDPE (no PTFE)	20 mL	00352101023259	Grey	No	
031	0908_SW009_211117	HDPE (no PTFE)	20 mL	00352101023165	Grey	No	
032	0908_SD014_211117	HDPE Soil Jar	200 mL	00621019053840	Grey	No	
033	0908_SW014_211117	HDPE (no PTFE)	20 mL	00352010026247	Grey	No	
033	0908_SW014_211117	HDPE (no PTFE)	20 mL	00352101023198	Grey	No	
033	0908_SW014_211117	HDPE (no PTFE)	20 mL	00352101023270	Grey	No	
034	0908_SD005_211117	HDPE Soil Jar	200 mL	00621019053928	Grey	No	
035	0908_SW005_211117	HDPE (no PTFE)	20 mL	00352101023164	Grey	No	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_SW/SD

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4


**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

ID	Container Description	Volume	Barcode	Color	Seal Intact?	Free Ice?	Temp on Receipt
035	0908_SW005_211117 HDPE (no PTFE)	20 mL	00352101023387	Grey	No		
036	0908_SW024_211117 HDPE (no PTFE)	20 mL	00352101023119	Grey	No		
036	0908_SW024_211117 HDPE (no PTFE)	20 mL	00352101023252	Grey	No		
037	0908_SD024_211117 HDPE Soil Jar	200 mL	00621019053957	Grey	No		
038	0908_SW023_211117 HDPE (no PTFE)	20 mL	00352101023224	Grey	No		
038	0908_SW023_211117 HDPE (no PTFE)	20 mL	00352101023170	Grey	No		
039	0908_SD023_211117 HDPE Soil Jar	200 mL	00621019053837	Grey	No		
040	0908_QC114_211119 HDPE (no PTFE)	20 mL	00352010028611	Grey	No		
040	0908_QC114_211119 HDPE (no PTFE)	20 mL	00352010028617	Grey	No		
041	0908_QC115_211119 HDPE Soil Jar	200 mL	00621019053932	Grey	No		
042	0908_QC110_211117 HDPE (no PTFE)	20 mL	00352101023315	Grey	No		
042	0908_QC110_211117 HDPE (no PTFE)	20 mL	00352101023264	Grey	No		
043	0908_QC113_211117 HDPE Soil Jar	200 mL	00621019053997	Grey	No		

Total Bottle Count: ALS: 66, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Project: 60612362 Client: Defence Project Manager: 





ALS Compass COC Reference: 30004 # Samples: X Sampler:  Phone: 

Turnaround Requirements: Standard  Urgent

Special Instructions:

ALS Use Only	ALS Use Only
Custody seal intact?	YES NO <u>N/A</u>
Free ice / frozen ice bricks upon receipt?	YES <u>NO</u> N/A
Random sample temperature on receipt?	<u>3.5</u> / °C

**Custody:**

Relinquished by:	Received by:	Relinquished by:	Received by:
 Date / Time: <u>26.11.21 12:30.</u>	 Date / Time: <u>26/11/21 12:35</u>	 Date / Time: <u>26/11/21 17:00</u>	 Date / Time: <u>26/11/21 7:40 PM</u>

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143123**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 30004  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM\_SW/SD  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 43  
**No. of samples analysed** : 41

**Page** : 1 of 23  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 26-Nov-2021 12:36  
**Date Analysis Commenced** : 27-Nov-2021  
**Issue Date** : 06-Dec-2021 14:22



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_QC116_211116	----	----	----	----
		Sampling date / time		16-Nov-2021 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143123-021	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.35	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	10.5	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.12	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.42	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.07	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.16	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_QC116_211116	----	----	----	----
		Sampling date / time	16-Nov-2021 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143123-021	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	12.9	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	11.8	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	12.7	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	96.4	----	----	----
13C8-PFOA	----	0.02	%	99.0	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD079_211112	0908_SD060_211115	0908_SD110_211116	0908_SD055_211116	0908_QC109_211116
Sampling date / time					12-Nov-2021 15:05	15-Nov-2021 12:30	16-Nov-2021 12:25	16-Nov-2021 12:44	16-Nov-2021 12:45
Compound	CAS Number	LOR	Unit		ES2143123-002	ES2143123-003	ES2143123-008	ES2143123-010	ES2143123-011
					Result	Result	Result	Result	Result
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%		50.1	28.5	64.4	28.4	27.4
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	0.0015	0.0022	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	0.0016	0.0003	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		0.0018	0.0227	0.0083	0.0011	0.0013
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		0.0002	0.0039	0.0005	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		0.0162	0.0912	0.189	0.0038	0.0048
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	0.0028	<0.0002	<0.0002
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	0.0003	0.0012	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	0.0029	0.0044	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	0.0004	0.0004	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	0.0014	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	0.0498	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD079_211112	0908_SD060_211115	0908_SD110_211116	0908_SD055_211116	0908_QC109_211116
Sampling date / time					12-Nov-2021 15:05	15-Nov-2021 12:30	16-Nov-2021 12:25	16-Nov-2021 12:44	16-Nov-2021 12:45
Compound	CAS Number	LOR	Unit	ES2143123-002	ES2143123-003	ES2143123-008	ES2143123-010	ES2143123-011	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0182	0.126	0.259	0.0049	0.0061	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0180	0.114	0.197	0.0049	0.0061	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0180	0.120	0.206	0.0049	0.0061	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	115	106	90.5	98.5	91.5	
13C8-PFOA	----	0.0002	%	99.5	100	98.0	97.0	94.5	





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_211116	0908_SD047_211116	0908_SD108_211116	0908_SD001_211119	0908_SD007_211116
Sampling date / time					16-Nov-2021 13:05	16-Nov-2021 13:23	16-Nov-2021 14:06	19-Nov-2021 14:30	16-Nov-2021 15:39
Compound	CAS Number	LOR	Unit	ES2143123-013	ES2143123-014	ES2143123-017	ES2143123-019	ES2143123-020	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	38.5	77.7	53.0	31.9	40.7	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011	0.0044	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.0012	0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0019	0.0186	0.0075	0.0031	0.0011	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0002	0.0019	0.0007	0.0003	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0039	0.364	0.181	0.0207	0.0471	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0051	0.0119	<0.0002	0.0003	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0005	0.0030	0.0011	0.0005	0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0011	0.0005	0.0003	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.0007	0.0010	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.0007	0.0002	0.0009	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.0090	0.0126	0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_211116	0908_SD047_211116	0908_SD108_211116	0908_SD001_211119	0908_SD007_211116
Sampling date / time				16-Nov-2021 13:05	16-Nov-2021 13:23	16-Nov-2021 14:06	19-Nov-2021 14:30	16-Nov-2021 15:39	
Compound	CAS Number	LOR	Unit	ES2143123-013	ES2143123-014	ES2143123-017	ES2143123-019	ES2143123-020	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0067	0.408	0.221	0.0260	0.0487	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0058	0.383	0.188	0.0238	0.0482	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0065	0.388	0.194	0.0246	0.0484	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	99.0	92.5	88.5	99.5	97.0	
13C8-PFOA	----	0.0002	%	99.0	89.0	94.5	100	94.5	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD081_211117	0908_SD062_211117	0908_SD006_211117	0908_SD009_211117	0908_SD014_211117
Sampling date / time				17-Nov-2021 10:42	17-Nov-2021 12:06	17-Nov-2021 13:23	17-Nov-2021 13:42	17-Nov-2021 14:30	
Compound	CAS Number	LOR	Unit	ES2143123-024	ES2143123-026	ES2143123-027	ES2143123-029	ES2143123-032	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	37.4	41.6	21.4	28.3	58.6	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.0003	0.0064	0.0009	0.0083	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0004	<0.0002	0.0006	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0062	0.0036	0.131	0.0171	0.0894	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0004	0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0008	<0.0002	0.0004	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0008	0.0002	0.0010	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0004	<0.0002	0.0005	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD081_211117	0908_SD062_211117	0908_SD006_211117	0908_SD009_211117	0908_SD014_211117
Sampling date / time				17-Nov-2021 10:42	17-Nov-2021 12:06	17-Nov-2021 13:23	17-Nov-2021 13:42	17-Nov-2021 14:30	
Compound	CAS Number	LOR	Unit	ES2143123-024	ES2143123-026	ES2143123-027	ES2143123-029	ES2143123-032	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0062	0.0039	0.140	0.0188	0.102	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0062	0.0039	0.137	0.0180	0.0977	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0062	0.0039	0.139	0.0182	0.100	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	108	98.0	98.5	97.5	95.5	
13C8-PFOA	----	0.0002	%	96.5	94.5	89.0	95.5	90.0	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD005_211117	0908_SD024_211117	0908_SD023_211117	0908_QC115_211119	0908_QC113_211117
Sampling date / time					17-Nov-2021 14:57	17-Nov-2021 15:17	17-Nov-2021 15:51	19-Nov-2021 14:53	17-Nov-2021 15:51
Compound	CAS Number	LOR	Unit	ES2143123-034	ES2143123-037	ES2143123-039	ES2143123-041	ES2143123-043	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	38.3	62.6	33.7	31.2	41.0	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0020	0.0005	<0.0002	0.0023	<0.0002	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0117	0.0034	0.0020	0.0191	0.0010	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD005_211117	0908_SD024_211117	0908_SD023_211117	0908_QC115_211119	0908_QC113_211117
Sampling date / time				17-Nov-2021 14:57	17-Nov-2021 15:17	17-Nov-2021 15:51	19-Nov-2021 14:53	17-Nov-2021 15:51	
Compound	CAS Number	LOR	Unit	ES2143123-034	ES2143123-037	ES2143123-039	ES2143123-041	ES2143123-043	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0137	0.0039	0.0020	0.0214	0.0010	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0137	0.0039	0.0020	0.0214	0.0010	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0137	0.0039	0.0020	0.0214	0.0010	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	86.5	92.5	110	96.0	96.5	
13C8-PFOA	----	0.0002	%	91.0	93.5	92.5	89.0	88.0	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD059_211115	----	----	----	----
		Sampling date / time		15-Nov-2021 11:50	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143123-045	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	25.2	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0010	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID	0908_SD059_211115					
		Sampling date / time	15-Nov-2021 11:50					
Compound	CAS Number	LOR	Unit	ES2143123-045				
				Result				
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0010	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0010	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0010	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	91.5	----	----	----	----
13C8-PFOA	----	0.0002	%	101	----	----	----	----





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW079_211112	0908_SW060_211115	0908_SW110_211116	0908_SW055_211116	0908_SW048_211116
				Sampling date / time	12-Nov-2021 15:10	15-Nov-2021 12:24	16-Nov-2021 12:16	16-Nov-2021 12:34	16-Nov-2021 13:03
Compound	CAS Number	LOR	Unit	ES2143123-001	ES2143123-004	ES2143123-007	ES2143123-009	ES2143123-012	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	1.22	0.07	0.09	0.14	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	1.14	0.07	0.08	0.10	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.17	8.04	0.96	0.89	1.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.63	0.05	0.04	0.05	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.23	13.4	5.96	2.02	0.38	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.4	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.60	0.10	0.06	0.04	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	3.29	0.35	0.25	0.26	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.34	0.06	0.04	0.04	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.62	0.09	0.06	0.06	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW079_211112	0908_SW060_211115	0908_SW110_211116	0908_SW055_211116	0908_SW048_211116
Sampling date / time				12-Nov-2021 15:10	15-Nov-2021 12:24	16-Nov-2021 12:16	16-Nov-2021 12:34	16-Nov-2021 13:03
Compound	CAS Number	LOR	Unit	ES2143123-001	ES2143123-004	ES2143123-007	ES2143123-009	ES2143123-012
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<b>0.16</b>	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.49</b>	<b>29.7</b>	<b>7.87</b>	<b>3.53</b>	<b>2.08</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.40</b>	<b>21.4</b>	<b>6.92</b>	<b>2.91</b>	<b>1.39</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.47</b>	<b>27.9</b>	<b>7.75</b>	<b>3.41</b>	<b>1.93</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>101</b>	<b>100</b>	<b>93.6</b>	<b>97.6</b>	<b>96.8</b>
13C8-PFOA	----	0.02	%	<b>97.2</b>	<b>90.6</b>	<b>97.9</b>	<b>96.2</b>	<b>96.4</b>



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW047_211116	0908_SW108_211116	0908_SW001_211119	0908_SW007_211116	0908_SW062_211117
				Sampling date / time	16-Nov-2021 13:29	16-Nov-2021 14:06	19-Nov-2021 14:49	16-Nov-2021 15:41	17-Nov-2021 12:05
Compound	CAS Number	LOR	Unit	ES2143123-015	ES2143123-016	ES2143123-018	ES2143123-022	ES2143123-025	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.06	0.05	0.08	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.10	0.07	0.04	0.09	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.54	1.03	0.45	1.54	0.13	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.09	0.06	0.04	0.12	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	9.14	4.73	2.18	12.8	0.08	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.12	0.10	0.03	0.13	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.47	0.35	0.11	0.48	0.04	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.11	0.06	<0.02	0.08	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.14	0.09	0.04	0.16	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW047_211116	0908_SW108_211116	0908_SW001_211119	0908_SW007_211116	0908_SW062_211117
Sampling date / time				16-Nov-2021 13:29	16-Nov-2021 14:06	19-Nov-2021 14:49	16-Nov-2021 15:41	17-Nov-2021 12:05	
Compound	CAS Number	LOR	Unit	ES2143123-015	ES2143123-016	ES2143123-018	ES2143123-022	ES2143123-025	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.16	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	11.8	6.71	2.94	15.5	0.25	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	10.7	5.76	2.63	14.3	0.21	
Sum of PFAS (WA DER List)	----	0.01	µg/L	11.6	6.58	2.86	15.3	0.25	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	99.1	95.9	95.8	96.9	99.8	
13C8-PFOA	----	0.02	%	96.3	93.7	92.6	96.9	92.8	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW006_211117	0908_SW009_211117	0908_SW014_211117	0908_SW005_211117	0908_SW024_211117
				Sampling date / time	17-Nov-2021 13:23	17-Nov-2021 13:43	17-Nov-2021 14:30	17-Nov-2021 14:57	17-Nov-2021 15:16
Compound	CAS Number	LOR	Unit	ES2143123-028	ES2143123-031	ES2143123-033	ES2143123-035	ES2143123-036	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.06	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	0.06	0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.49	0.79	0.34	0.29	0.12	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.08	0.03	0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	12.0	2.23	0.91	0.71	0.10	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.13	0.03	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.44	0.17	0.08	0.07	0.04	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.14	0.06	0.02	0.02	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW006_211117	0908_SW009_211117	0908_SW014_211117	0908_SW005_211117	0908_SW024_211117
Sampling date / time				17-Nov-2021 13:23	17-Nov-2021 13:43	17-Nov-2021 14:30	17-Nov-2021 14:57	17-Nov-2021 15:16	
Compound	CAS Number	LOR	Unit	ES2143123-028	ES2143123-031	ES2143123-033	ES2143123-035	ES2143123-036	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	14.5	3.50	1.46	1.11	0.26	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	13.5	3.02	1.25	1.00	0.22	
Sum of PFAS (WA DER List)	----	0.01	µg/L	14.3	3.36	1.41	1.09	0.26	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	98.5	101	99.1	101	99.6	
13C8-PFOA	----	0.02	%	100	95.3	96.9	99.1	93.6	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW023_211117	0908_QC114_211119	0908_QC110_211117	0908_SW059_211115	----
				Sampling date / time	17-Nov-2021 15:49	19-Nov-2021 14:30	17-Nov-2021 15:49	15-Nov-2021 11:47	----
Compound	CAS Number	LOR	Unit	ES2143123-038	ES2143123-040	ES2143123-042	ES2143123-044	-----	
				Result	Result	Result	Result	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.07	0.02	0.13	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.03	<0.02	0.12	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.53	0.22	1.16	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.05	<0.02	0.07	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.23	2.30	0.17	1.18	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.03	<0.02	0.05	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	0.13	0.06	0.28	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.04	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.05	0.01	0.07	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW023_211117	0908_QC114_211119	0908_QC110_211117	0908_SW059_211115	----
Sampling date / time				17-Nov-2021 15:49	19-Nov-2021 14:30	17-Nov-2021 15:49	15-Nov-2021 11:47	----	----
Compound	CAS Number	LOR	Unit	ES2143123-038	ES2143123-040	ES2143123-042	ES2143123-044	-----	-----
				Result	Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.59</b>	<b>3.19</b>	<b>0.48</b>	<b>3.10</b>	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.47</b>	<b>2.83</b>	<b>0.39</b>	<b>2.34</b>	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.57</b>	<b>3.11</b>	<b>0.48</b>	<b>2.91</b>	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>99.5</b>	<b>97.0</b>	<b>102</b>	<b>102</b>	----	----
13C8-PFOA	----	0.02	%	<b>95.4</b>	<b>91.5</b>	<b>98.8</b>	<b>93.3</b>	----	----





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143123	Page	: 1 of 12
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 26-Nov-2021
Site	: WLM_SW/SD	Issue Date	: 06-Dec-2021
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 43
Order number	: 60612562_2.1	No. of samples analysed	: 41

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143118--045	Anonymous	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143118--064	Anonymous	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	ES2143118--064	Anonymous	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>						
HDPE Soil Jar 0908_SD079_211112	----	----	----	30-Nov-2021	26-Nov-2021	4

### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	2	38	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	38	2.63	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.



Matrix: SOIL

Evaluation: ✘ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SD079_211112	12-Nov-2021	----	----	----	30-Nov-2021	26-Nov-2021	✘	
<b>HDPE Soil Jar (EA055)</b> 0908_SD060_211115,	0908_SD059_211115	15-Nov-2021	----	----	27-Nov-2021	29-Nov-2021	✔	
<b>HDPE Soil Jar (EA055)</b> 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	----	----	29-Nov-2021	30-Nov-2021	✔	
<b>HDPE Soil Jar (EA055)</b> 0908_SD081_211117, 0908_SD006_211117, 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD062_211117, 0908_SD009_211117, 0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	----	----	30-Nov-2021	01-Dec-2021	✔	
<b>HDPE Soil Jar (EA055)</b> 0908_SD001_211119,	0908_QC115_211119	19-Nov-2021	----	----	30-Nov-2021	03-Dec-2021	✔	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✔	03-Dec-2021	10-Jan-2022	✔	
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✔	02-Dec-2021	10-Jan-2022	✔	
<b>HDPE Soil Jar (EP231X)</b> 0908_SD060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✔	03-Dec-2021	10-Jan-2022	✔	
<b>HDPE Soil Jar (EP231X)</b> 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✔	03-Dec-2021	10-Jan-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✔	02-Dec-2021	10-Jan-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD081_211117, 0908_SD006_211117,	0908_SD062_211117, 0908_SD009_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✔	03-Dec-2021	10-Jan-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_QC115_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✔	02-Dec-2021	10-Jan-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✔	03-Dec-2021	10-Jan-2022	✔



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD059_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	02-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD081_211117, 0908_SD006_211117,	0908_SD062_211117, 0908_SD009_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_QC115_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD059_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	02-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD081_211117, 0908_SD006_211117,	0908_SD062_211117, 0908_SD009_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_QC115_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD059_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	02-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD081_211117, 0908_SD006_211117,	0908_SD062_211117, 0908_SD009_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_QC115_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD059_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	02-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	03-Dec-2021	10-Jan-2022	✓	
HDPE Soil Jar (EP231X) 0908_SD110_211116, 0908_QC109_211116, 0908_SD047_211116, 0908_SD007_211116	0908_SD055_211116, 0908_SD048_211116, 0908_SD108_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD014_211117, 0908_SD024_211117, 0908_QC113_211117	0908_SD005_211117, 0908_SD023_211117,	17-Nov-2021	01-Dec-2021	16-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD081_211117, 0908_SD006_211117,	0908_SD062_211117, 0908_SD009_211117	17-Nov-2021	01-Dec-2021	16-May-2022	✓	03-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_QC115_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	02-Dec-2021	10-Jan-2022	✓
HDPE Soil Jar (EP231X) 0908_SD001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	03-Dec-2021	10-Jan-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	01-Dec-2021	11-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW059_211115	15-Nov-2021	03-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW110_211116, 0908_SW048_211116, 0908_SW108_211116, 0908_SW007_211116	0908_SW055_211116, 0908_SW047_211116, 0908_QC116_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW062_211117, 0908_SW009_211117, 0908_SW005_211117, 0908_SW023_211117,	0908_SW006_211117, 0908_SW014_211117, 0908_SW024_211117, 0908_QC110_211117	17-Nov-2021	02-Dec-2021	16-May-2022	✓	02-Dec-2021	16-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW001_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	01-Dec-2021	18-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_QC114_211119	19-Nov-2021	02-Dec-2021	18-May-2022	✓	02-Dec-2021	18-May-2022	✓	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	01-Dec-2021	11-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW059_211115	15-Nov-2021	03-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW110_211116, 0908_SW048_211116, 0908_SW108_211116, 0908_SW007_211116	0908_SW055_211116, 0908_SW047_211116, 0908_QC116_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW062_211117, 0908_SW009_211117, 0908_SW005_211117, 0908_SW023_211117,	0908_SW006_211117, 0908_SW014_211117, 0908_SW024_211117, 0908_QC110_211117	17-Nov-2021	02-Dec-2021	16-May-2022	✓	02-Dec-2021	16-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW001_211119	19-Nov-2021	01-Dec-2021	18-May-2022	✓	01-Dec-2021	18-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_QC114_211119	19-Nov-2021	02-Dec-2021	18-May-2022	✓	02-Dec-2021	18-May-2022	✓	



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_SW079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	01-Dec-2021	11-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW059_211115	15-Nov-2021	03-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
HDPE (no PTFE) (EP231X) 0908_SW110_211116, 0908_SW048_211116, 0908_SW108_211116, 0908_SW007_211116	0908_SW055_211116, 0908_SW047_211116, 0908_QC116_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW062_211117, 0908_SW009_211117, 0908_SW005_211117, 0908_SW023_211117,	0908_SW006_211117, 0908_SW014_211117, 0908_SW024_211117, 0908_QC110_211117	17-Nov-2021	02-Dec-2021	16-May-2022	✓	02-Dec-2021	16-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	01-Dec-2021	18-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC114_211119		19-Nov-2021	02-Dec-2021	18-May-2022	✓	02-Dec-2021	18-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW079_211112		12-Nov-2021	01-Dec-2021	11-May-2022	✓	01-Dec-2021	11-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW060_211115		15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW059_211115		15-Nov-2021	03-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW110_211116, 0908_SW048_211116, 0908_SW108_211116, 0908_SW007_211116	0908_SW055_211116, 0908_SW047_211116, 0908_QC116_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW062_211117, 0908_SW009_211117, 0908_SW005_211117, 0908_SW023_211117,	0908_SW006_211117, 0908_SW014_211117, 0908_SW024_211117, 0908_QC110_211117	17-Nov-2021	02-Dec-2021	16-May-2022	✓	02-Dec-2021	16-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_SW001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	01-Dec-2021	18-May-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC114_211119		19-Nov-2021	02-Dec-2021	18-May-2022	✓	02-Dec-2021	18-May-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW079_211112	12-Nov-2021	01-Dec-2021	11-May-2022	✓	01-Dec-2021	11-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW060_211115	15-Nov-2021	01-Dec-2021	14-May-2022	✓	01-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW059_211115	15-Nov-2021	03-Dec-2021	14-May-2022	✓	03-Dec-2021	14-May-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_211116, 0908_SW048_211116, 0908_SW108_211116, 0908_SW007_211116	0908_SW055_211116, 0908_SW047_211116, 0908_QC116_211116,	16-Nov-2021	01-Dec-2021	15-May-2022	✓	01-Dec-2021	15-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW062_211117, 0908_SW009_211117, 0908_SW005_211117, 0908_SW023_211117,	0908_SW006_211117, 0908_SW014_211117, 0908_SW024_211117, 0908_QC110_211117	17-Nov-2021	02-Dec-2021	16-May-2022	✓	02-Dec-2021	16-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_211119		19-Nov-2021	01-Dec-2021	18-May-2022	✓	01-Dec-2021	18-May-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_211119		19-Nov-2021	02-Dec-2021	18-May-2022	✓	02-Dec-2021	18-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

### Matrix: SOIL

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	5	49	10.20	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

### Matrix: WATER

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	38	2.63	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143123

Page : 1 of 16

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP

Date Samples Received : 26-Nov-2021

Order number : 60612562\_2.1

Date Analysis Commenced : 27-Nov-2021

C-O-C number : 30004

Issue Date : 06-Dec-2021

Sampler : [REDACTED]

Site : WLM\_SW/SD

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 43

No. of samples analysed : 41



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4041553)</b>									
ES2143044-074	Anonymous	EA055: Moisture Content	----	0.1	%	3.4	3.7	6.7	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4043879)</b>									
ES2142265-005	Anonymous	EA055: Moisture Content	----	0.1	%	6.8	7.4	9.6	No Limit
ES2143095-002	Anonymous	EA055: Moisture Content	----	0.1	%	8.8	8.4	5.7	No Limit
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4046373)</b>									
ES2143044-102	Anonymous	EA055: Moisture Content	----	0.1	%	31.5	33.3	5.6	0% - 20%
ES2143123-034	0908_SD005_211117	EA055: Moisture Content	----	0.1	%	38.3	42.8	11.1	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4045651)</b>									
ES2143118-045	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0005	0.0006	20.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0064	0.0066	2.5	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0008	0.0008	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0629	0.0598	4.9	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0017	0.0017	0.0	No Limit
ES2143123-011	0908_QC109_211116	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0013	0.0012	9.2	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0048	0.0052	7.3	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4048536)</b>									
EB2134067-041	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4048536) - continued</b>									
EB2134067-041	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP2114340-059	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4045651)</b>									
ES2143118-045	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0022	0.0020	5.3	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0009	0.0009	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	0.0032	0.0032	0.0	0% - 50%
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0070	0.0067	4.8	0% - 20%
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	0.0012	0.0012	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	0.0010	0.0009	14.5	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2143123-011	0908_QC109_211116	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4048536)</b>									
EB2134067-041	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4048536) - continued</b>									
EB2134067-041	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP2114340-059	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045651)</b>									
ES2143118-045	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0006	0.0007	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0006	<0.0006	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0006	<0.0006	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0006	<0.0006	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0006	<0.0006	0.0	No Limit
ES2143123-011	0908_QC109_211116	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4045651) - continued</b>									
ES2143123-011	0908_QC109_211116	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4048536)</b>									
EB2134067-041	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2114340-059	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045651)</b>									
ES2143118-045	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2143123-011	0908_QC109_211116	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4045651) - continued</b>									
ES2143123-011	0908_QC109_211116	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4048536)</b>									
EB2134067-041	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP2114340-059	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4047739)</b>									
ES2143046-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4047739)</b>									
ES2143046-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4047739) - continued</b>									
ES2143046-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4047739)</b>									
ES2143046-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4047739) - continued</b>									
ES2143118-065	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4047739)</b>									
ES2143046-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2143118-065	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4047739)</b>									
ES2143046-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2143118-065	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045651)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	59.0	134	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4048536)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045651)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.8	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.7	69.0	133	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4048536)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	100	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	124	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	123	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	64.0	136	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4048536) - continued</b>									
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	114	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045651)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.1	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.3	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.9	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.6	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	61.0	139	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4048536)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	110	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	125	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045651)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.0	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.8	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.2	69.2	143	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4048536)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	119	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	114	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	124	69.2	143	

Sub-Matrix: WATER

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
	Spike	Spike Recovery (%)	Acceptable Limits (%)





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047701)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	102	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	121	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	117	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047739)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.6	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	93.4	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	89.6	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047701)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	104	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	122	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	123	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	130	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	114	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	113	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.4	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047701)</b>									





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047701) - continued</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	98.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	95.7	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	103	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.6	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	106	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	120	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047739)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.4	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	87.6	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.2	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	107	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047701)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	110	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	112	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	121	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047739)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.6	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	110	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	113	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Matrix Spike (MS) Report



Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
				Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4045651)</b>							
ES2143118-045	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	107	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	99.6	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	104	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	107	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	124	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4048536)</b>							
EB2134067-041	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	125	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	117	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	107	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	113	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	109	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	105	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4045651)</b>							
ES2143118-045	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	100	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	124	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	111	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	116	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	102	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	113	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	109	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	110	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	111	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.00125 mg/kg	97.2	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	99.2	69.0	133
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4048536)</b>					
EB2134067-041	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	102	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	114	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	122	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	125	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	122	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	120	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	118	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	125	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	104	69.0	133



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4045651)</b>							
ES2143118-045	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	97.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	101	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	105	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	97.1	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	104	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	122	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	109	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4048536)</b>							
EB2134067-041	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	112	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	100	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	93.3	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	96.5	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	112	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	116	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	118	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4045651)</b>							
ES2143118-045	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	106	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	104	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	108	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4048536)</b>							
EB2134067-041	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	106	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	118	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	118	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	74.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4047739)</b>							
ES2143118-064	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	87.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	82.8	53.0	142
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4047739)</b>					
ES2143118-064	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	86.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	125	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	130	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	124	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	121	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	118	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	115	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	111	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.3	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4047739)</b>							
ES2143118-064	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	88.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	88.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	103	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4047739)</b>							
ES2143118-064	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	85.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.0	71.4	144





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2143600

Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : 17 WARABROOK BLVD
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield
NSW Australia 2164

E-mail :
Telephone :
Facsimile :

E-mail :
Telephone : +61 2 8784 8555
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1

Page : 1 of 3
Quote number : ES2021AECOMAU0024 (SY/139/19 v4
60612562\_2.1)

C-O-C number : 30886

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : WLM (SW)

Sampler :

Dates

Date Samples Received : 01-Dec-2021 17:12
Client Requested Due Date : 08-Dec-2021

Issue Date : 02-Dec-2021
Scheduled Reporting Date : 08-Dec-2021

Delivery Details

Mode of Delivery : Undefined
No. of coolers/boxes :
Receipt Detail :

Security Seal : Not Available
Temperature : 8.9°C - Ice present
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
Please direct any queries you have regarding this work order to the above ALS laboratory contact.
Analytical work for this work order will be conducted at ALS Sydney.
Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2143600-001	30-Nov-2021 16:30	0908_SW081_211130	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.







Telephone : +61-2-8784 8555

<b>CHAIN OF CUSTODY</b> (ALS) COC#: 30886 ALS Laboratory: ES Sydney	RELINQUISHED BY: DATE TIME:	RECEIVED BY: <i>SO/SY/ALS</i> DATE TIME: <i>01/12/21 1940</i>	RELINQUISHED BY: DATE TIME:	RECEIVED BY: DATE TIME:	
	CLIENT: AECOMAU - AECOM Australia Pty Ltd PROJECT: NSW_0908_PFASOMP SITE: WLM (SW) ORDER NO: 60612562_2.1 PROJECT MANAGER: PRIMARY SAMPLER:	TURNAROUND REQUIREMENTS : 5 Days Biohazard Info:	<b>LABORATORY USE ONLY (Circle)</b> Custody Seal intact? <input checked="" type="radio"/> Yes No N/A Preg Ice / frozen ice bricks present upon receipt? <input checked="" type="radio"/> Yes No N/A Random Sample Temperature on Receipt: <i>8.9</i> °C Other comments:		
EMAIL REPORTS TO: EMAIL INVOICES TO:	CONTACT PH: QUOTE NO: SY/139/19 v4 60612562_2.1 / ES2021AECOMAU002	SAMPLER MOBILE: 4			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SW081_211130		30/11/2021 04:30 PM	Water	ALS: 2 Non ALS: 0	No	X		





CERTIFICATE OF ANALYSIS

Work Order : ES2143600
Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : 17 WARABROOK BLVD
NEWCASTLE Newcastle 2304
Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 30886
Sampler :
Site : WLM (SW)
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 5
Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 01-Dec-2021 17:12
Date Analysis Commenced : 02-Dec-2021
Issue Date : 08-Dec-2021 15:39



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
Analytical Results
Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Row 1: [Redacted], LCMS Coordinator, Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW081\_211130

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Compound		CAS Number	LOR	Unit	Sampling date / time				
					30-Nov-2021 16:30	----	----	----	----
					ES2143600-001	-----	-----	-----	-----
					Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)		375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)		2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)		355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)		375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)		335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)		375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)		2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)		307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)		375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)		335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)		375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)		335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)		2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)		307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)		72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)		376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)		754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)		31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)		4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW081_211130					
		Sampling date / time	30-Nov-2021 16:30					
Compound	CAS Number	LOR	Unit	ES2143600-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	100	----	----	----	----
13C8-PFOA	----	0.02	%	116	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2143600	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 01-Dec-2021
Site	: WLM (SW)	Issue Date	: 08-Dec-2021
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**





## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW081_211130	30-Nov-2021	06-Dec-2021	29-May-2022	✓	07-Dec-2021	29-May-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW081_211130	30-Nov-2021	06-Dec-2021	29-May-2022	✓	07-Dec-2021	29-May-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW081_211130	30-Nov-2021	06-Dec-2021	29-May-2022	✓	07-Dec-2021	29-May-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW081_211130	30-Nov-2021	06-Dec-2021	29-May-2022	✓	07-Dec-2021	29-May-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW081_211130	30-Nov-2021	06-Dec-2021	29-May-2022	✓	07-Dec-2021	29-May-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



QUALITY CONTROL REPORT

Work Order : ES2143600
Client : AECOM AUSTRALIA PTY LTD
Contact :
Address : 17 WARABROOK BLVD
NEWCASTLE Newcastle 2304
Telephone :
Project : NSW\_0908\_PFASOMP
Order number : 60612562\_2.1
C-O-C number : 30886
Sampler :
Site : WLM (SW)
Quote number : SY/139/19 v4 60612562\_2.1
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 7
Laboratory : Environmental Division Sydney
Contact :
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61 2 8784 8555
Date Samples Received : 01-Dec-2021
Date Analysis Commenced : 02-Dec-2021
Issue Date : 08-Dec-2021



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Accreditation Category. Row 1: [Redacted], LCMS Coordinator, Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4053879)</b>									
EP2114474-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP2114474-008	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	0.07	23.4	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.08	28.7	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4053879)</b>									
EP2114474-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4053879) - continued</b>									
EP2114474-008	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4053879)</b>									
EP2114474-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2114474-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4053879)</b>									
EP2114474-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Page : 4 of 7  
 Work Order : ES2143600  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4053879) - continued</b>									
EP2114474-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2114474-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4053879)</b>									
EP2114474-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP2114474-008	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.11	0.17	42.9	0% - 50%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4053879)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	110	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	113	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	102	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	69.8	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4053879)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	113	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	67.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	124	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4053879)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	116	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	131	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	104	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	134	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	107	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	91.8	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4053879)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	104	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	106	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	135	67.0	138	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4053879) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.0	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4053879)</b>							
EP2114474-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	79.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	101	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	91.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	91.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	91.8	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4053879)</b>							
EP2114474-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	101	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	107	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	102	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	106	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	95.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	113	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	106	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	118	71.0	132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4053879)</b>					
EP2114474-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	106	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	129	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	118	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	110	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	111	65.0	136



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4053879) - continued</b>							
EP2114474-003	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4053879)</b>							
EP2114474-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	94.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	95.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	116	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	143	71.4	144

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]

### Sample Login Details

<b>Your reference</b>	NSW_0908_PFASOMP
<b>Envirolab Reference</b>	284113
<b>Date Sample Received</b>	30/11/2021
<b>Date Instructions Received</b>	30/11/2021
<b>Date Results Expected to be Reported</b>	07/12/2021

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	12 Water, 4 Soil
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	12
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

<b>Phone: 02 9910 6200</b>	<b>Phone: 02 9910 6200</b>
<b>Fax: 02 9910 6201</b>	<b>Fax: 02 9910 6201</b>
<b>Email: [REDACTED]</b>	<b>Email: [REDACTED]</b>

Analysis Underway, details on the following page:



Sample ID	PFAS in Soils Extended	PFAS in Waters Extended
0908_QC200_211109		✓
0908_QC201_211109		✓
0908_QC202_211111		✓
0908_QC203_211110		✓
0908_QC204_211111		✓
0908_QC205_211112		✓
0908_QC206_211115		✓
0908_QC207_211115		✓
0908_QC208_211116		✓
0908_QC209_211118		✓
0908_QC210_211117		✓
0908_QC211_211117		✓
0908_QC212_211117	✓	
0908_QC213_211117	✓	
0908_QC214_211119	✓	
0908_QC215_211119	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

AECOM Australia Pty Ltd

Level 21, 420 George Street  
Sydney, NSW, 2000

PO Box Q410, QVB PO, Sydney, NSW, 1230

T +61 2 8934 1000  
F +61 2 8934 0001

**Laboratory Details**

Lab. Name: Envirolab Services  
Lab. Address: 12 Ashley St, Chatswood NSW 2067, Australia  
Contact Name:  
Lab. Ref:

Tel: 02 9449 0181

Fax:

Preliminary Report by:

Final Report by:

Lab Quote No:

Sampled By: [Redacted]

Project Name: NSW\_0908\_PFASOMP

AECOM Project #: 60612562\_2.1

Purchase Order No:

**Specifications: Please report in ESdat format**

- Urgent TAT required? (please circle: 24hr 48hr 5 days)
- Fast TAT Guarantee Required? No
- Is any sediment layer present in waters to be excluded from extractions?
- % extraneous material removed from samples to be reported as per NEPM 5.1.1?
- Special storage requirements? (details: \_\_\_\_\_)
- Report Format: **ESdat**
- Project Manager: Geoff Tredinnick

Yes (tick)

**Analysis Request**

Extended PFAS Suite

**ENVIROLAB**  
Envirolab Services  
12 Ashley St  
Chatswood NSW 2067  
Ph: (02) 9410 6200

Job No:

Date Received:

Time Received:

Received By: *CM*

Temp: Cool/Ambient

Cooling Use/Repack

Security: Intact/Broken/None

*984113*  
*30/11/21*  
*800*

Lab. ID	Sample ID	Sampling Date	Matrix			Preservation				Container (No. & type)	Extended PFAS Suite
			soil	water	sed	filtered	acid	ice	other		
	0908_QC200_211109	9/11/2021		X					X	2	X
	0908_QC201_211109	9/11/2021		X					X	2	X
	0908_QC202_211111	11/11/2021		X					X	2	X
	0908_QC203_211110	10/11/2021		X					X	2	X
	0908_QC204_211111	11/11/2021		X					X	2	X
	0908_QC205_211112	12/11/2021		X					X	2	X
	0908_QC206_211115	15/11/2021		X					X	2	X
	0908_QC207_211115	15/11/2021		X					X	2	X
	0908_QC208_211116	16/11/2021		X					X	2	X
	0908_QC209_211118	18/11/2021		X					X	2	X
	0908_QC210_211117	17/11/2021		X					X	2	X
	0908_QC211_211117	17/11/2021		X					X	2	X
	0908_QC212_211117	17/11/2021			X				X	1	X
	0908_QC213_211117	17/11/2021			X				X	1	X
	0908_QC214_211119	19/11/2021	X						X	1	X
	0908_QC215_211119	19/11/2021			X				X	1	X

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROTECT NAME. Temp. received: *12.0 °C* Report & invoice: [Redacted] Lab Report / Eskey ID

Relinquished by: [Redacted] Signed: *CM* Date: *20.11.21* Relinquished by: [Redacted] Signed: Date:

Received by: [Redacted] Signed: *CM* Date: *30/11/21* Received by: [Redacted] Signed: Date:



PFAS in Soils Extended				
Our Reference		284113-A-13	284113-A-14	284113-A-16
Your Reference	UNITS	0908_QC212_21 1117	0908_QC213_21 1117	0908_QC215_21 1119
Date Sampled		17/11/2021	17/11/2021	19/11/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	03/12/2021	03/12/2021	03/12/2021
Date analysed	-	03/12/2021	03/12/2021	03/12/2021
Perfluorobutanesulfonic acid	µg/kg	0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	0.2	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	6.3	0.4	0.7
Perfluoroheptanesulfonic acid	µg/kg	0.7	<0.1	0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	59	2.8	11
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	0.4
Perfluorobutanoic acid	µg/kg	0.3	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.4	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.7	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.2	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.4	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	108	100	106
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	89	92	91
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	62	49	61
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	61	42	58
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	51	39	50

PFAS in Soils Extended				
Our Reference		284113-A-13	284113-A-14	284113-A-16
Your Reference	UNITS	0908_QC212_21 1117	0908_QC213_21 1117	0908_QC215_21 1119
Date Sampled		17/11/2021	17/11/2021	19/11/2021
Type of sample		Soil	Soil	Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	71	50	71
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	64	47	59
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	62	42	58
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	58	42	56
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	66	48	65
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	42	37	48
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	48	41	48
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	27	42	24
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	#	#	#
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	#	38	40
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	70	41	63
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	77	48	61
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	74	112	48
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	24	39	28
Extracted ISTD d <sub>3</sub> N MeFOSA	%	23	36	23
Extracted ISTD d <sub>5</sub> N EtFOSA	%	24	35	37
Extracted ISTD d <sub>7</sub> N MeFOSE	%	31	37	35
Extracted ISTD d <sub>9</sub> N EtFOSE	%	33	33	39
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	25	39	35
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	23	37	24
Total Positive PFHxS & PFOS	µg/kg	65	3.2	12
Total Positive PFOS & PFOA	µg/kg	59	2.8	11
Total Positive PFAS	µg/kg	68	3.2	13



Moisture				
Our Reference		284113-A-13	284113-A-14	284113-A-16
Your Reference	UNITS	0908_QC212_21 1117	0908_QC213_21 1117	0908_QC215_21 1119
Date Sampled		17/11/2021	17/11/2021	19/11/2021
Type of sample		Soil	Soil	Soil
Date prepared	-	01/12/2021	01/12/2021	01/12/2021
Date analysed	-	02/12/2021	02/12/2021	02/12/2021
Moisture	%	51	47	31

PFAS in Waters Extended			
Our Reference		284113-A-11	284113-A-12
Your Reference	UNITS	0908_QC210_21 1117	0908_QC211_21 1117
Date Sampled		17/11/2021	17/11/2021
Type of sample		Water	Water
Date prepared	-	30/11/2021	30/11/2021
Date analysed	-	30/11/2021	30/11/2021
Perfluorobutanesulfonic acid	µg/L	<0.01	0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.12	0.12
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.07	0.05
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.02	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid ethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid ethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	99	97
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	104	98
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	115	108
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	103	99
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	102	101

PFAS in Waters Extended			
Our Reference		284113-A-11	284113-A-12
Your Reference	UNITS	0908_QC210_21 1117	0908_QC211_21 1117
Date Sampled		17/11/2021	17/11/2021
Type of sample		Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	66	67
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	89	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	88	92
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	86	94
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	99	109
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	93	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	105	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	114	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	82	84
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	92	86
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	53	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	71	118
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	92	125
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	98	99
Extracted ISTD d <sub>3</sub> N MeFOSA	%	101	101
Extracted ISTD d <sub>5</sub> N EtFOSA	%	98	98
Extracted ISTD d <sub>7</sub> N MeFOSE	%	105	112
Extracted ISTD d <sub>9</sub> N EtFOSE	%	101	100
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	82	103
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	85	110
Total Positive PFHxS & PFOS	µg/L	0.19	0.17
Total Positive PFOA & PFOS	µg/L	0.07	0.05
Total Positive PFAS	µg/L	0.21	0.21

Method ID	Methodology Summary
<p><b>Inorg-008</b></p> <p><b>Org-029</b></p>	<p>Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.</p> <p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			03/12/2021	[NT]	[NT]	[NT]	[NT]	03/12/2021	[NT]
Date analysed	-			03/12/2021	[NT]	[NT]	[NT]	[NT]	03/12/2021	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	122	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	127	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	127	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	107	[NT]
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	127	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	134	[NT]	[NT]	[NT]	[NT]	136	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	117	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	109	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			30/11/2021	11	30/11/2021	30/11/2021		30/11/2021	[NT]
Date analysed	-			30/11/2021	11	30/11/2021	30/11/2021		30/11/2021	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	100	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	0.01	0	105	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	11	0.12	0.12	0	103	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	113	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	11	0.07	0.08	13	98	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	76	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	104	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	97	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	11	0.02	0.02	0	106	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	112	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	98	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	120	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	103	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	97	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	114	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	104	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	11	<0.5	<0.5	0	99	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	107	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	11	<0.01	<0.01	0	102	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	94	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	104	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	118	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	106	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	11	<0.1	<0.1	0	108	[NT]
N-Me perfluorooctanesulfonamid ethanol	µg/L	0.05	Org-029	<0.05	11	<0.05	<0.05	0	99	[NT]
N-Et perfluorooctanesulfonamid ethanol	µg/L	0.5	Org-029	<0.5	11	<0.5	<0.5	0	100	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	104	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	11	<0.02	<0.02	0	100	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	100	11	99	97	2	102	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	105	11	104	105	1	105	[NT]



QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	105	11	115	112	3	104	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	97	11	103	98	5	97	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	99	11	102	100	2	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	98	11	66	64	3	99	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	104	11	89	87	2	101	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	95	11	88	86	2	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	93	11	86	89	3	94	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	103	11	99	96	3	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	99	11	93	92	1	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	99	11	105	100	5	106	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	113	11	114	105	8	110	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	96	11	82	80	2	97	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	93	11	92	94	2	101	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	99	11	53	53	0	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	102	11	71	68	4	102	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	108	11	92	82	11	114	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	105	11	98	95	3	100	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	94	11	101	98	3	100	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	98	11	98	96	2	98	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	111	11	105	105	0	114	[NT]

Client Reference: NSW\_0908\_PFASOMP

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	103	11	101	93	8	100	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	96	11	82	76	8	100	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	110	11	85	79	7	102	[NT]

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).



PFAS in Soils Extended		
Our Reference		284113-15
Your Reference	UNITS	0908_QC214_21 1119
Date Sampled		19/11/2021
Type of sample		Soil
Date prepared	-	03/12/2021
Date analysed	-	03/12/2021
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.9
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	<0.2
Perfluoropentanoic acid	µg/kg	<0.2
Perfluorohexanoic acid	µg/kg	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1
Perfluorononanoic acid	µg/kg	<0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	<0.1
8:2 FTS	µg/kg	<0.2
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	105
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	91
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	68
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	59
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	54

PFAS in Soils Extended		
Our Reference		284113-15
Your Reference	UNITS	0908_QC214_21 1119
Date Sampled		19/11/2021
Type of sample		Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	78
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	66
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	63
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	60
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	67
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	54
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	61
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	63
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	40
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	64
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	68
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	81
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	71
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	56
Extracted ISTD d <sub>3</sub> N MeFOSA	%	52
Extracted ISTD d <sub>5</sub> N EtFOSA	%	50
Extracted ISTD d <sub>7</sub> N MeFOSE	%	52
Extracted ISTD d <sub>9</sub> N EtFOSE	%	53
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	63
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	62
Total Positive PFHxS & PFOS	µg/kg	0.9
Total Positive PFOS & PFOA	µg/kg	0.9
Total Positive PFAS	µg/kg	0.9



Moisture		
Our Reference		284113-15
Your Reference	UNITS	0908_QC214_21 1119
Date Sampled		19/11/2021
Type of sample		Soil
Date prepared	-	1/12/2021
Date analysed	-	2/12/2021
Moisture	%	34

PFAS in Waters Extended						
Our Reference		284113-1	284113-2	284113-3	284113-4	284113-5
Your Reference	UNITS	0908_QC200_21 1109	0908_QC201_21 1109	0908_QC202_21 1111	0908_QC203_21 1110	0908_QC204_21 1111
Date Sampled		9/11/2021	9/11/2021	11/11/2021	10/11/2021	11/11/2021
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	30/11/2021	30/11/2021	30/11/2021	30/11/2021	30/11/2021
Date analysed	-	30/11/2021	30/11/2021	30/11/2021	30/11/2021	30/11/2021
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.02	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	0.75	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.04	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	0.08	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	0.05	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid ethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid ethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	101	100	99	101	104
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	102	102	102	103	103
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	108	107	106	106	111
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	98	95	96	100	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	99	98	97	98	100

PFAS in Waters Extended						
Our Reference		284113-1	284113-2	284113-3	284113-4	284113-5
Your Reference	UNITS	0908_QC200_21 1109	0908_QC201_21 1109	0908_QC202_21 1111	0908_QC203_21 1110	0908_QC204_21 1111
Date Sampled		9/11/2021	9/11/2021	11/11/2021	10/11/2021	11/11/2021
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	88	67	58	93	74
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	99	97	77	102	89
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	99	90	78	97	85
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	98	98	87	98	89
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	103	109	92	104	97
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	102	100	88	104	96
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	102	102	95	102	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	115	119	108	109	113
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	97	90	57	89	75
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	90	95	87	87	75
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	95	108	39	93	50
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	102	123	56	110	67
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	109	124	73	115	77
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	104	102	91	103	97
Extracted ISTD d <sub>3</sub> N MeFOSA	%	98	98	100	98	100
Extracted ISTD d <sub>5</sub> N EtFOSA	%	97	98	95	96	97
Extracted ISTD d <sub>7</sub> N MeFOSE	%	113	108	101	107	103
Extracted ISTD d <sub>9</sub> N EtFOSE	%	100	101	97	99	99
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	99	104	59	98	69
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	114	113	66	110	78
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	0.82	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	0.08	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	0.98	<0.01

PFAS in Waters Extended						
Our Reference		284113-6	284113-7	284113-8	284113-9	284113-10
Your Reference	UNITS	0908_QC205_21 1112	0908_QC206_21 1115	0908_QC207_21 1115	0908_QC208_21 1116	0908_QC209_21 1118
Date Sampled		12/11/2021	15/11/2021	15/11/2021	16/11/2021	18/11/2021
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	30/11/2021	30/11/2021	30/11/2021	30/11/2021	30/11/2021
Date analysed	-	30/11/2021	30/11/2021	30/11/2021	30/11/2021	30/11/2021
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.01	0.23	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.03	0.34	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02	0.02	0.79	5.3	0.03
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	0.10	0.30	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	0.23	14	0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	0.2	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	0.25	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.06	0.87	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	0.18	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.08	0.32	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	0.09	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103	99	100	97	101
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	101	98	103	101	102
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	109	105	116	106	108
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	96	98	100	98	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	97	98	102	125	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	69	43	94	52	92

PFAS in Waters Extended						
Our Reference		284113-6	284113-7	284113-8	284113-9	284113-10
Your Reference	UNITS	0908_QC205_21 1112	0908_QC206_21 1115	0908_QC207_21 1115	0908_QC208_21 1116	0908_QC209_21 1118
Date Sampled		12/11/2021	15/11/2021	15/11/2021	16/11/2021	18/11/2021
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	99	88	102	94	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	89	91	102	91	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	92	90	96	90	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	106	105	108	106	106
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	95	91	101	89	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	100	104	102	106	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	115	114	116	114	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	78	69	97	83	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	90	90	99	103	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	96	101	100	104	92
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	119	118	108	119	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	118	110	115	120	112
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	99	97	107	100	105
Extracted ISTD d <sub>3</sub> N MeFOSA	%	98	98	105	103	100
Extracted ISTD d <sub>5</sub> N EtFOSA	%	96	95	104	101	100
Extracted ISTD d <sub>7</sub> N MeFOSE	%	107	103	116	109	110
Extracted ISTD d <sub>9</sub> N EtFOSE	%	98	95	103	100	103
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	94	97	103	105	108
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	105	104	115	113	118
Total Positive PFHxS & PFOS	µg/L	0.04	0.02	1.0	19	0.05
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	0.31	14	0.01
Total Positive PFAS	µg/L	0.04	0.02	1.3	22	0.05

Method ID	Methodology Summary
<p><b>Inorg-008</b></p> <p><b>Org-029</b></p>	<p>Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.</p> <p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			03/12/2021	[NT]	[NT]	[NT]	[NT]	03/12/2021	[NT]
Date analysed	-			03/12/2021	[NT]	[NT]	[NT]	[NT]	03/12/2021	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	122	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	127	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	127	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	107	[NT]
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	127	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	134	[NT]	[NT]	[NT]	[NT]	136	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	117	[NT]



Client Reference: NSW\_0908\_PFASOMP

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	109	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	284113-2
Date prepared	-			30/11/2021	1	30/11/2021	30/11/2021		30/11/2021	30/11/2021
Date analysed	-			30/11/2021	1	30/11/2021	30/11/2021		30/11/2021	30/11/2021
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	102
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	105
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	109
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	113	130
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	99
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	76	69
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	110
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	101
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	113
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	113
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	98
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	120	132
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	114
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	100
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	114	115
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	115
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	99	98
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	107	133
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	107
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	94	107
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	106
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	118	124
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	106	115
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	117
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	99	108
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	100	115
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	109
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	101
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	100	1	101	101	0	102	98
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	105	1	102	105	3	105	102

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	284113-2
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	105	1	108	106	2	104	107
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	97	1	98	99	1	97	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	99	1	99	100	1	98	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	98	1	88	90	2	99	64
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	104	1	99	99	0	101	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	95	1	99	98	1	98	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	93	1	98	101	3	94	95
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	103	1	103	102	1	100	103
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	99	1	102	103	1	103	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	99	1	102	103	1	106	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	113	1	115	118	3	110	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	96	1	97	98	1	97	83
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	93	1	90	91	1	101	92
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	99	1	95	100	5	98	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	102	1	102	105	3	102	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	108	1	109	111	2	114	118
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	105	1	104	104	0	100	94
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	94	1	98	97	1	100	99
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	98	1	97	99	2	98	96
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	111	1	113	112	1	114	108

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	284113-2
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	103	1	100	103	3	100	93
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	96	1	99	97	2	100	100
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	110	1	114	112	2	102	109

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

# Sampling Event Factual Report - Biota Sampling, February 2022

RAAF Base Williamtown

29-Jul-2022



# Sampling Event Factual Report - Biota Sampling, February 2022

RAAF Base Williamtown

Client: Department of Defence

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## List of Units

Units	Term
mg	Milligrams
g	Grams
kg	Kilograms
mm	Millimetres
km	Kilometres
km/hr	Kilometres per hour
mg/kg	Milligrams per kilogram

## 1.0 Introduction

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the RAAF Base Williamtown ('the Base') and the Williamtown Management Area in the NSW & JBT Region.

In February 2022, AECOM undertook an aquatic biota sampling event at Fullerton Cove (refer to **Figure F1**, in **Appendix A**) located approximately 4 km southwest of the Base and included selected locations and specific species as outlined in the *Addendum OMP – Biota Sampling, RAAF Base Williamtown* dated 27 May 2019 (AECOM, 2019).

The monitoring event was undertaken in accordance with the *Sampling and Analysis Quality Plan (SAQP) Rev E* (AECOM, 2021).

### 1.1 Objectives

The objective of the biota sampling event is to provide the NSW Government with monitoring data of temporal variations of PFAS concentrations in selected sentinel finfish and Crustacea appropriate to support and/or update ongoing advice relating to minimising PFAS exposure.

## 2.0 Scope of Work

The planned scope of work for the biota sampling event included:

- collection of aquatic biota specimens from Fullerton Cove on 23 February 2022. The target biota species collected comprised dusky flathead (*P. fuscus*), luderick (*G. tricuspidata*) and the school prawn (*M. macleay*)
- preparation of 12 composite samples (up to 10 individuals for dusky flathead and luderick, and up to 40 individuals for school prawn) by the National Measurement Institute (NMI) laboratory.
- retention of one frozen composite sample at NMI for potential future analysis
- collection of data relating to the type and quantity of any bycatch caught in the sampling equipment
- collection of water quality parameters (dissolved oxygen, electrical conductivity, pH, redox and temperature) during sampling
- photograph the aquatic biota specimens caught and the sampling locations and keep on record in project file
- analysis of the composite samples for the extended PFAS suite at the standard laboratory limit of reporting (LOR)
- preparation of this factual biota sampling event report.

Deviations from this scope are discussed in **Section 3.0**.

### 3.0 Deviations from the SAQP

The February 2022 biota sampling event was completed in general accordance with the SAQP (AECOM, 2021), with the exception of the deviations outlined in **Table 1** below.

**Table 1** Deviations from SAQP (AECOM, 2021)

SAQP	February 2022 Sampling Event
Nets will be placed over night in the target locations and will be collected the following morning.	<p>Due to adverse weather conditions at the time of the sampling event, nets were placed in the target locations and were collected within three hours for both luderick and dusky flathead, rather than being left in place overnight.</p> <p>This change in methodology is not considered to impact upon meeting the objectives of the OMP given that sufficient numbers of dusky flathead and school prawns were collected, and DPI Fisheries advised that it was unlikely that any additional luderick would be collected due to their scarcity at the time of the sampling event.</p>
Four composite samples shall be collected per event, per target species. Each composite sample will comprise of up to 10 individual specimens and will be prepared at the laboratory under the laboratory's supervision.	<p>Due to the limited availability of luderick in Fullerton Cove during the February 2022 sampling event, DPI Fisheries were unable to obtain the target quota of individual luderick specimens to prepare four composite samples (containing up to 10 individual specimens).</p> <p>A total of six luderick (out of a target of 40) were collected during the sampling event. AECOM instructed DPI Fisheries to prepare two composite samples (comprising three individual specimens each) however due to a miscommunication, DPI Fisheries prepared four "composite" samples (two samples containing two individual specimens and two samples containing one specimen) before submitting them to the laboratory for analysis.</p> <p>While the composite samples for luderick contain fewer individual specimens than specified in the SAQP, AECOM considers the data obtained for luderick from this sampling event as reliable given that the results are within the historical data range.</p>
Annual biota sampling events are to be completed in January, commencing in December	Due to prolonged wet weather conditions, and the reported scarcity of sentinel species in Fullerton Cove, DPI Fisheries recommended delaying the start of the annual biota sampling event until February 2022 in an effort to collect the target number of individual specimens.
Method of fish euthanasia	During the February 2022 sampling event, fish were euthanised by ice and water, rather than the methodology specified in the SAQP (blunt force trauma followed by exsanguination). This alternative method was considered by DPI Fisheries to be suitable and within their permit. This change in methodology is unlikely to impact the reliability of the results.
Records of live bycatch	During the February 2022 sampling event, DPI Fisheries did not record details of live bycatch. While this is noted to be a deviation from the SAQP, it is not considered to impact the reliability of the data collected.

## 4.0 Methodology

The biota sampling event was completed at Fullerton Cove in February 2022 in general accordance with the Addendum OMP (AECOM, 2019) and the SAQP (AECOM, 2021).

### 4.1 Sampling Locations

The sampling was conducted on 23 February 2022 in Fullerton Cove from seven locations shown in **Table 2** below. Samples were collected by the NSW Department of Primary Industries (DPI), Port Stephens Fisheries Institute (Fisheries).

Refer to **Figure F2** in **Appendix A** for specific biota sampling locations.

**Table 2** Biota Sampling Locations

Sample Location ID	Sampling Date	Latitude	Longitude
1	23/02/2022	-32.8511	151.7847
2	23/02/2022	-32.8339	151.7898
3	23/02/2022	-32.8492	151.7829
4	23/02/2022	-32.8618	151.7857
5	23/02/2022	-32.8540	151.7912
6	23/02/2022	-32.8503	151.8002
7	23/02/2022	-32.8522	151.7957

### 4.2 Sample Type

The following sentinel species as outlined in the OMP Addendum (AECOM, 2019) were sampled:

- Dusky flathead (*P. fuscus*)
- Luderick (*G. tricuspidata*)
- School prawn (*M. macleayi*).

### 4.3 Sampling Methodology

DPI Fisheries were responsible for obtaining the required sampling permits, and sample collection was conducted under a Section 37 Scientific Collection Permit (Permit P01/0059), and an Animal Research Authority issued by NSW Department of Primary Industries (Permit 14-11).

#### 4.3.1 Sample Collection

Aquatic biota samples were captured utilising the following process:

- boats were used to deploy mesh netting. Nets were placed in the target locations and were collected within 3 hours for luderick and dusky flathead. School prawns were captured using an otter trawl net
- observations on the number of target species and bycatch captured were recorded. Live bycatch was returned to the water, and dead bycatch was retained and disposed
- target specimens were retrieved from the nets and euthanised by ice and water
- target specimens were placed in labelled plastic bags and transported to the Port Stephens Fisheries Institute on ice in a portable cooler.
- target specimen metrics (length, weight, bag number) were recorded at the Fisheries Institute by DPI



- water quality parameters including (dissolved oxygen, electrical conductivity, pH, redox and temperature) were recorded by NSW DPI.

#### 4.3.2 Sample Preparation

Aquatic biota sample preparation (for analysis) was undertaken utilising the following process:

- Biota sample preparation occurred at the Fisheries Institute which involved descaling the fish, removing the left fillet (with skin remaining on the fillet), and placing it into a clean plastic bag corresponding to that particular composite sample. Prawns were peeled and muscle meat (including vein) placed into the bag.
- DPI Fisheries prepared 12 composite samples, of up to 10 individuals for finfish and 40 individuals for school prawn. The bags containing the composites were frozen in readiness for shipment to the laboratory. The composite sample information is presented in **Table 3**.

The biota samples were transported directly from the Fisheries Institute to NMI laboratory, located in North Ryde NSW on ice and under chain-of-custody (CoC) conditions. Each composite sample was homogenised at the laboratory in readiness for PFAS analysis.

**Table 3 Composite Sample Information**

Sample ID	Species	Type of Sample	No. of Samples in Composite	Location(s) Species Collected From
0908_BIOAFA052_220223	School prawn	Crustacean-Muscle/vein	40	1
0908_BIOAFA053_220223	School prawn	Crustacean-Muscle/vein	40	1
0908_BIOAFA054_220223	School prawn	Crustacean-Muscle/vein	40	1
0908_BIOAFA055_220223	School prawn	Crustacean-Muscle/vein	40	1
0908_BIOAFA056_220223	Dusky flathead	Fish-Muscle/skin	10	2, 5
0908_BIOAFA057_220223	Dusky flathead	Fish-Muscle/skin	10	2, 4, 5, 7
0908_BIOAFA058_220223	Dusky flathead	Fish-Muscle/skin	10	2, 3, 4, 5
0908_BIOAFA059_220223	Dusky flathead	Fish-Muscle/skin	10	2, 3, 4
0908_BIOAFA060_220223	Luderick	Fish-Muscle/skin	2	3, 6
0908_BIOAFA061_220223	Luderick	Fish-Muscle/skin	2	3
0908_BIOAFA062_220223	Luderick	Fish-Muscle/skin	1	3
0908_BIOAFA063_220223	Luderick	Fish-Muscle/skin	1	3

#### 4.4 Laboratory Analysis

The composite biota tissue samples were analysed for the extended PFAS suite.

Laboratory reports and CoC documentation are presented in **Appendix C**.

## 4.5 Adopted Screening Criteria

The adopted screening criteria for this aquatic biota sampling event are sourced from the Food Standards Australia New Zealand (FSANZ) *Perfluorinated chemicals in food* (FSANZ, 2017) and are summarised in **Table 4** below.

**Table 4 PFAS Screening Criteria - Aquatic Biota**

Compound	Criteria	Comment
<b>FSANZ 2017 2-6 years Crustaceans (all species)</b>		
PFOS	0.065 mg/kg	<i>All school prawn sample results will be compared against these criteria</i>
PFHxS	0.065 mg/kg	
PFOA	0.52 mg/kg	
<b>FSANZ 2017 2-6 years Finfish (all species)</b>		
PFOS	0.0052 mg/kg	<i>All luderick and dusky flathead sample results will be compared against these criteria</i>
PFHxS	0.0052 mg/kg	
PFOA	0.041 mg/kg	

## 4.6 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2020).

Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with DCMM requirements

## 5.0 Results

### 5.1 Conditions During Sampling

Sampling was conducted on 23 February 2022. Weather conditions observed during the February 2022 sampling event included:

- Temperature: 19.2 – 28.6°C.
- Rainfall: 25.2 millimetres (mm).
- Winds ranging between 9 and 39 kilometres per hour (km/hr).

The water quality parameters collected on 23 February 2022 are summarised in **Table 5**.

**Table 5 Water Quality Parameters**

Date	Dissolved Oxygen (mg/L)	Electrical Conductivity (mS/cm)	pH	Turbidity (NTU)	Temperature (°C)
23 February 2022	6.0	28.2	8.2	46.0	25.9

Note: Data presented is the average of the Water Quality Parameters measured at each sampling location

### 5.2 Number of Sampled Biota and Characteristics

The number of luderick (*G. tricuspidata*), dusky flathead (*P. fuscus*) and school prawn (*M. macleayi*) collected during the February 2022 biota sampling event are presented in **Table 6**.

Details of the live bycatch during this event were not recorded by DPI.

The average length and weight recorded for each species was as follows:

- 1.9 cm and 5.3 grams (g) for school prawns.
- 29.9 cm and 529.6 g for luderick.
- 46.1 cm and 662.6 g for dusky flathead.

**Table 6 Aquatic Biota Sampled**

Location ID	No. of School Prawn Samples	No. of Luderick Individuals	No. of Dusky Flathead Individuals
1	160	0	0
2	0	0	15
3	0	5	7
4	0	0	8
5	0	0	7
6	0	1	0
7	0	0	3

### 5.3 Analytical Results

The samples were analysed for the PFAS suite and are provided in **Table T1** in **Appendix B**.

A summary of the reported concentrations of PFOS and PFHxS in biota tissues are presented in **Table 7**.

Table 7 Summary of Aquatic Biota PFAS Analytical Concentrations

Analyte	Number of samples analysed	Number of detections	Minimum concentration (mg/kg)	Maximum concentration (mg/kg)
<b>Dusky Flathead (<i>Platycephalus fuscus</i>)</b>				
PFOS	4	4	0.012	0.014
PFHxS	4	0	<0.0005	<0.0005
<b>Luderick (<i>Girella tricuspidata</i>)</b>				
PFOS	4	4	0.0014	0.0046
PFHxS	4	0	<0.0005	<0.0005
<b>School Prawn (<i>Metapenaeus macleayi</i>)</b>				
PFOS	4	4	0.0053	0.0072
PFHxS	4	4	0.00058	0.00080

A summary of the PFAS concentrations detected in the tissue samples is as follows:

- PFOS was detected in all biota composite samples with concentrations ranging between 0.0014 mg/kg and 0.014 mg/kg
- the PFOS concentrations were above the FSANZ (2017) finfish trigger value of 0.0052 mg/kg (for children aged between two and six years) in the four dusky flathead composite samples analysed
- the PFOS concentrations were below the FSANZ (2017) finfish trigger value of 0.0052 mg/kg (for children aged between two and six years) in the four luderick composite samples analysed
- the PFOS concentrations were below the FSANZ (2017) crustacean trigger value of 0.065 mg/kg (for children aged between two and six years) in the four school prawn composite samples analysed
- in addition to PFOS, PFHxS was detected in the composite samples collected from the school prawn with concentrations ranging between 0.00058 and 0.0008 mg/kg
- concentrations of PFAS were reported within the historical range (2016 to 2021) for the respective sentinel species analysed.

No other PFAS were detected at concentrations above the laboratory LORs in the luderick and dusky flathead composite samples analysed.

## 6.0 Discussion

AECOM completed the biota sampling event in Fullerton Cove on 23 February 2022 to meet the requirements of the OMP Addendum (AECOM, 2019). The target species collected were the school prawn (*M. macleaya*); luderick (*G. tricuspidata*) and dusky flathead (*P. fuscus*).

A summary of the PFAS concentrations detected in the tissue samples was as follows:

- PFOS was detected in all biota composite samples with concentrations ranging between 0.0014 mg/kg and 0.014 mg/kg
- concentrations of PFOS in the dusky flathead composite samples analysed were above the FSANZ (2017) finfish trigger value of 0.0052 mg/kg (for children aged between two and six years). Concentrations of PFOS in remaining composite samples were below the FSANZ (2017) trigger values
- in addition to PFOS, PFHxS was detected in the composite samples collected from the school prawn with concentrations ranging between 0.00058 and 0.00080 mg/kg
- no other PFAS compounds were detected at concentrations above the laboratory LORs in the luderick and dusky flathead composite samples analysed
- concentrations of PFAS were reported within the historical range (2016 to 2021) for the respective sentinel species analysed. Biota results collected under the OMP (2020 to 2022) are presented in **Table T2 (Appendix B)**.

## 7.0 References

AECOM, 2017. *Off-Site Human Health Risk Assessment December 2017 RAAF Base Williamtown Stage 2B Environmental Investigation*. 1 December 2017.

AECOM, 2019. *Addendum OMP – Biota Sampling, RAAF Base Williamtown*. 27 May 2019.

AECOM, 2021. *Sampling and Analysis Quality Plan, PFAS OMP, RAAF Base Williamtown*. Rev E dated 26 November 2021.

FSANZ (2017) *Perfluorinated chemicals in food*. Food Standards Australia New Zealand.

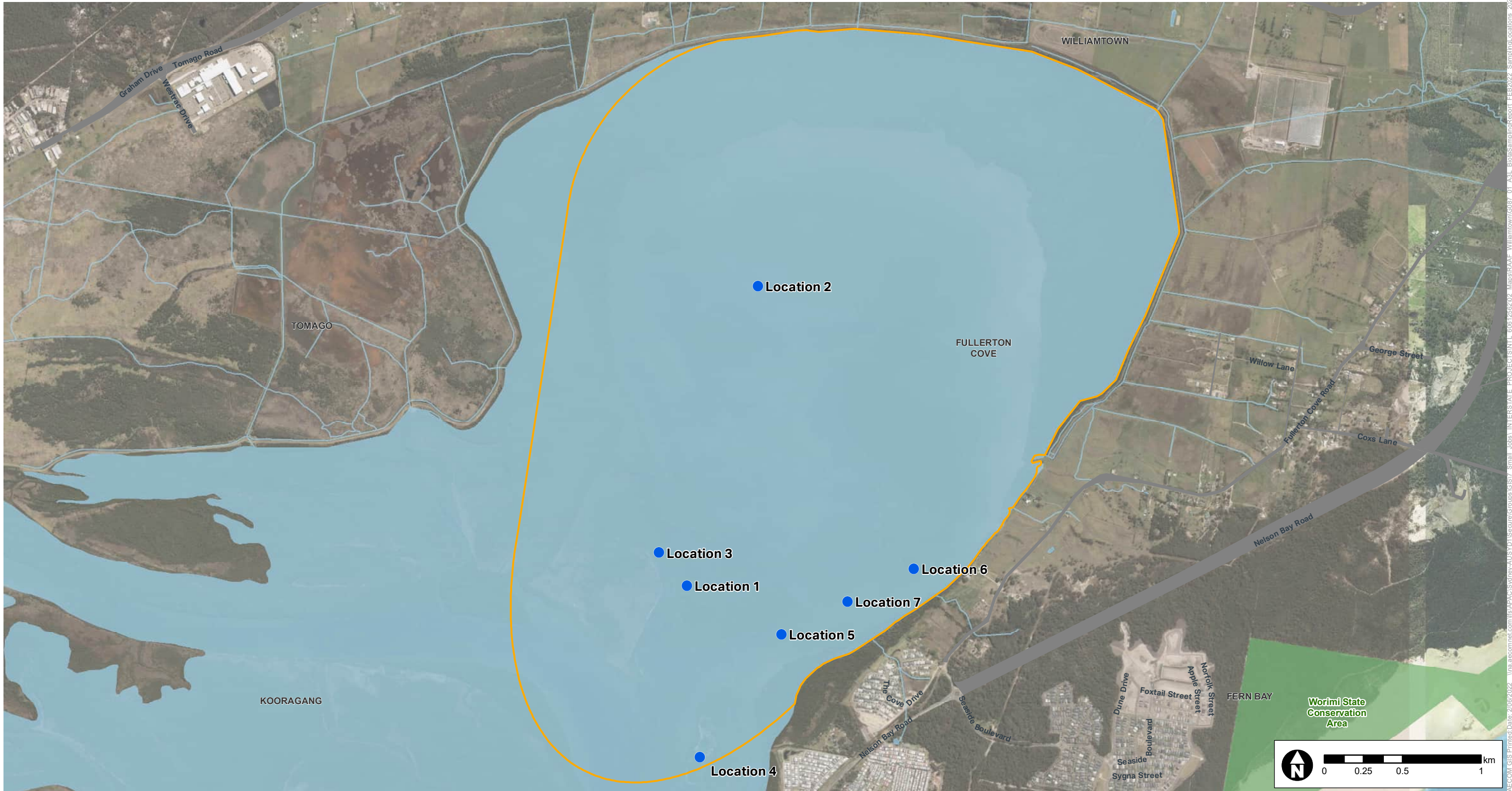
# Appendix A

Figures









- KEY**
- Biota Sampling Area
  - Aquatic Biota Sampling Locations

SCALE: 1:24,000 SIZE: A3  
 SHEET: 1 of 1 COORDINATE SYSTEM: GDA 1994 MGA Zone 56

TITLE: **Figure F2: Biota Sampling Locations**

PROJECT: **BIOTA SAMPLING - FEBRUARY 2022, RAAF BASE WILLIAMTOWN**

CLIENT: **DEPARTMENT OF DEFENCE**

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# Appendix B

Tables

Table T1 - Biota Analytical Results

		Per- and Poly-fluoroalkyl Substances																										
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorononane sulfonate (PFNS)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)		
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
LOR		0.0003	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	
FSANZ 2017 2-6 years Crustaceans (all species)		0.52	0.065	0.065																								
FSANZ 2017 2-6 years Finfish (all species)		0.041	0.0052	0.0052																								
Location Code	Date	Field ID	Species Type	Lab Report #	<0.0003	0.0063	0.00059	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA052	23/02/2022	0908 BIOAFA052_220223	Eastern School Prawn	RN1354026	<0.0003	0.0072	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA053	23/02/2022	0908 BIOAFA053_220223	Eastern School Prawn	RN1354026	<0.0003	0.0072	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA054	23/02/2022	0908 BIOAFA054_220223	Eastern School Prawn	RN1354026	<0.0003	0.0058	0.00062	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA055	23/02/2022	0908 BIOAFA055_220223	Eastern School Prawn	RN1354026	<0.0003	0.0053	0.00058	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA056	23/02/2022	0908 BIOAFA056_220223	Dusky Flathead	RN1354026	<0.0003	0.012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA057	23/02/2022	0908 BIOAFA057_220223	Dusky Flathead	RN1354026	<0.0003	0.014	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA058	23/02/2022	0908 BIOAFA058_220223	Dusky Flathead	RN1354026	<0.0003	0.013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA059	23/02/2022	0908 BIOAFA059_220223	Dusky Flathead	RN1354026	<0.0003	0.013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA060	23/02/2022	0908 BIOAFA060_220223	Luderick	RN1354026	<0.0003	0.0021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA061	23/02/2022	0908 BIOAFA061_220223	Luderick	RN1354026	<0.0003	0.0046	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA062	23/02/2022	0908 BIOAFA062_220223	Luderick	RN1354026	<0.0003	0.0014	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIOAFA063	23/02/2022	0908 BIOAFA063_220223	Luderick	RN1354026	<0.0003	0.0019	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Data Comments:  
 LOR = Limit of Reporting  
 mg/kg = milligrams per kilogram  
 Dusky Flathead and Luderick samples compared against the 'FSANZ 2017 2-6 years Finfish (all species)' criteria  
 School Prawn samples compared against the 'FSANZ 2017 2-6 years Crustaceans (all species)' criteria





# Appendix C

## Laboratory Certificates



**REPORT OF ANALYSIS**

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT
<b>Attention</b> : [REDACTED]	<b>Phone</b> : 02 9449 0169
<b>Project Name</b> :	
<b>Your Client Services Manager</b> : [REDACTED]	

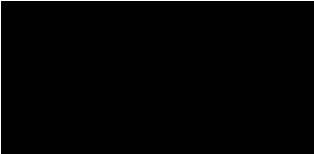
Lab Reg No.	Sample Ref	Sample Description
N22/006479	0908_BIOAFA052_220223	MUSCLE/VEIN 23/02/2022

Lab Reg No.	Sample Reference	Units	N22/006479 0908_BIOAFA052_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFBA (375-22-4)	mg/kg	<0.0005		AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005		AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005		AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005		AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003		AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005		AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005		AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005		AUTLO7
PFDODA (307-55-1)	mg/kg	<0.0005		AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001		AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001		AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005		AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005		AUTLO7
PFHxS (355-46-4)	mg/kg	0.00059		AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005		AUTLO7
PFOS (1763-23-1)	mg/kg	0.0063		AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001		AUTLO7
PFDS (335-77-3)	mg/kg	<0.001		AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005		AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005		AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005		AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005		AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005		AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005		AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005		AUTLO7
PFBA (Surrogate Recovery)	%	88		AUTLO7
PFPeA (Surrogate Recovery)	%	69		AUTLO7
PFHxA (Surrogate Recovery)	%	73		AUTLO7
PFHpA (Surrogate Recovery)	%	85		AUTLO7
PFOA (Surrogate Recovery)	%	91		AUTLO7

## REPORT OF ANALYSIS

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Lab Reg No.		N22/006479		
Sample Reference	Units	0908_BIOAFA052_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	88		AUTL07
PFDA (Surrogate Recovery)	%	84		AUTL07
PfUnDA (Surrogate Recovery)	%	86		AUTL07
PFDoDA (Surrogate Recovery)	%	80		AUTL07
PFTeDA (Surrogate Recovery)	%	77		AUTL07
PFBS (Surrogate Recovery)	%	83		AUTL07
PFHxS (Surrogate Recovery)	%	88		AUTL07
PFOS (Surrogate Recovery)	%	88		AUTL07
PFOSA (Surrogate Recovery)	%	88		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	99		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	106		AUTL07
4:2 FTS (Surrogate Recovery)	%	85		AUTL07
6:2 FTS (Surrogate Recovery)	%	127		AUTL07
8:2 FTS (Surrogate Recovery)	%	120		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



Australian Ultra Trace Laboratory

06-JUN-2022

## REPORT OF ANALYSIS

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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006480	0908_BIOAFA053_220223	MUSCLE/VEIN 23/02/2022

Lab Reg No.		N22/006480	
Sample Reference	Units	0908_BIOAFA053_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005	AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005	AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003	AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005	AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005	AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001	AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005	AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTLO7
PFHxS (355-46-4)	mg/kg	0.00080	AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005	AUTLO7
PFOS (1763-23-1)	mg/kg	0.0072	AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001	AUTLO7
PFDS (335-77-3)	mg/kg	<0.001	AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005	AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTLO7
PFBA (Surrogate Recovery)	%	96	AUTLO7
PFPeA (Surrogate Recovery)	%	78	AUTLO7
PFHxA (Surrogate Recovery)	%	76	AUTLO7
PFHpA (Surrogate Recovery)	%	88	AUTLO7
PFOA (Surrogate Recovery)	%	95	AUTLO7



## REPORT OF ANALYSIS

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Report No. RN1354026

Lab Reg No.		N22/006480		
Sample Reference	Units	0908_BIOAFA053_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	108		AUTL07
PFDA (Surrogate Recovery)	%	97		AUTL07
PFUnDA (Surrogate Recovery)	%	94		AUTL07
PFDoDA (Surrogate Recovery)	%	89		AUTL07
PFTeDA (Surrogate Recovery)	%	94		AUTL07
PFBS (Surrogate Recovery)	%	86		AUTL07
PFHxS (Surrogate Recovery)	%	84		AUTL07
PFOS (Surrogate Recovery)	%	94		AUTL07
PFOSA (Surrogate Recovery)	%	89		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	109		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	138		AUTL07
4:2 FTS (Surrogate Recovery)	%	80		AUTL07
6:2 FTS (Surrogate Recovery)	%	106		AUTL07
8:2 FTS (Surrogate Recovery)	%	102		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



██████████ Analyst  
Australian Ultra Trace Laboratory

06-JUN-2022

## REPORT OF ANALYSIS

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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006481	0908_BIOAFA054_220223	MUSCLE/VEIN 23/02/2022

Lab Reg No.	Sample Reference	Units	N22/006481 0908_BIOAFA054_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFBA (375-22-4)	mg/kg	<0.0005		AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005		AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005		AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005		AUTL07
PFOA (335-67-1)	mg/kg	<0.0003		AUTL07
PFNA (375-95-1)	mg/kg	<0.0005		AUTL07
PFDA (335-76-2)	mg/kg	<0.0005		AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005		AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005		AUTL07
PFTTrDA (72629-94-8)	mg/kg	<0.001		AUTL07
PFTeDA (376-06-7)	mg/kg	<0.001		AUTL07
PFBS (375-73-5)	mg/kg	<0.0005		AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005		AUTL07
PFHxS (355-46-4)	mg/kg	0.00062		AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005		AUTL07
PFOS (1763-23-1)	mg/kg	0.0058		AUTL07
PFNS (68259-12-1)	mg/kg	<0.001		AUTL07
PFDS (335-77-3)	mg/kg	<0.001		AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005		AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005		AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005		AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.0005		AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005		AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005		AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.0005		AUTL07
PFBA (Surrogate Recovery)	%	97		AUTL07
PFPeA (Surrogate Recovery)	%	64		AUTL07
PFHxA (Surrogate Recovery)	%	77		AUTL07
PFHpA (Surrogate Recovery)	%	84		AUTL07
PFOA (Surrogate Recovery)	%	102		AUTL07

## REPORT OF ANALYSIS

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Report No. RN1354026

Lab Reg No.		N22/006481		
Sample Reference	Units	0908_BIOAFA054_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	99		AUTL07
PFDA (Surrogate Recovery)	%	100		AUTL07
PFUnDA (Surrogate Recovery)	%	96		AUTL07
PFDoDA (Surrogate Recovery)	%	86		AUTL07
PFTeDA (Surrogate Recovery)	%	95		AUTL07
PFBS (Surrogate Recovery)	%	85		AUTL07
PFHxS (Surrogate Recovery)	%	93		AUTL07
PFOS (Surrogate Recovery)	%	91		AUTL07
PFOSA (Surrogate Recovery)	%	95		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	107		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	124		AUTL07
4:2 FTS (Surrogate Recovery)	%	71		AUTL07
6:2 FTS (Surrogate Recovery)	%	109		AUTL07
8:2 FTS (Surrogate Recovery)	%	107		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



██████████ Analyst  
Australian Ultra Trace Laboratory

06-JUN-2022

## REPORT OF ANALYSIS

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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006482	0908_BIOAFA055_220223	MUSCLE/VEIN 23/02/2022

Lab Reg No.		N22/006482	
Sample Reference	Units	0908_BIOAFA055_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005	AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005	AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003	AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005	AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005	AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001	AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005	AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTLO7
PFHxS (355-46-4)	mg/kg	0.00058	AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005	AUTLO7
PFOS (1763-23-1)	mg/kg	0.0053	AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001	AUTLO7
PFDS (335-77-3)	mg/kg	<0.001	AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005	AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTLO7
PFBA (Surrogate Recovery)	%	100	AUTLO7
PFPeA (Surrogate Recovery)	%	73	AUTLO7
PFHxA (Surrogate Recovery)	%	81	AUTLO7
PFHpA (Surrogate Recovery)	%	88	AUTLO7
PFOA (Surrogate Recovery)	%	94	AUTLO7

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Lab Reg No.		N22/006482		
Sample Reference	Units	0908_BIOAFA055_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	115		AUTL07
PFDA (Surrogate Recovery)	%	88		AUTL07
PFUnDA (Surrogate Recovery)	%	86		AUTL07
PFDoDA (Surrogate Recovery)	%	80		AUTL07
PFTeDA (Surrogate Recovery)	%	85		AUTL07
PFBS (Surrogate Recovery)	%	94		AUTL07
PFHxS (Surrogate Recovery)	%	101		AUTL07
PFOS (Surrogate Recovery)	%	115		AUTL07
PFOSA (Surrogate Recovery)	%	101		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	114		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	109		AUTL07
4:2 FTS (Surrogate Recovery)	%	91		AUTL07
6:2 FTS (Surrogate Recovery)	%	129		AUTL07
8:2 FTS (Surrogate Recovery)	%	112		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006483	0908_BIOAFA056_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.		N22/006483			
Sample Reference	Units	0908_BIOAFA056_220223			Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>					
PFBA (375-22-4)	mg/kg	<0.0005			AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005			AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005			AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005			AUTL07
PFOA (335-67-1)	mg/kg	<0.0003			AUTL07
PFNA (375-95-1)	mg/kg	<0.0005			AUTL07
PFDA (335-76-2)	mg/kg	<0.0005			AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005			AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005			AUTL07
PFTTrDA (72629-94-8)	mg/kg	<0.001			AUTL07
PFTeDA (376-06-7)	mg/kg	<0.001			AUTL07
PFBS (375-73-5)	mg/kg	<0.0005			AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005			AUTL07
PFHxS (355-46-4)	mg/kg	<0.0005			AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005			AUTL07
PFOS (1763-23-1)	mg/kg	0.012			AUTL07
PFNS (68259-12-1)	mg/kg	<0.001			AUTL07
PFDS (335-77-3)	mg/kg	<0.001			AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005			AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005			AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005			AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.0005			AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005			AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005			AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.0005			AUTL07
PFBA (Surrogate Recovery)	%	104			AUTL07
PFPeA (Surrogate Recovery)	%	106			AUTL07
PFHxA (Surrogate Recovery)	%	108			AUTL07
PFHpA (Surrogate Recovery)	%	89			AUTL07
PFOA (Surrogate Recovery)	%	103			AUTL07

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Lab Reg No.		N22/006483		
Sample Reference	Units	0908_BIOAFA056_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	96		AUTL07
PFDA (Surrogate Recovery)	%	99		AUTL07
PFUnDA (Surrogate Recovery)	%	107		AUTL07
PFDoDA (Surrogate Recovery)	%	95		AUTL07
PFTeDA (Surrogate Recovery)	%	103		AUTL07
PFBS (Surrogate Recovery)	%	86		AUTL07
PFHxS (Surrogate Recovery)	%	84		AUTL07
PFOS (Surrogate Recovery)	%	82		AUTL07
PFOSA (Surrogate Recovery)	%	83		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	99		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	133		AUTL07
4:2 FTS (Surrogate Recovery)	%	97		AUTL07
6:2 FTS (Surrogate Recovery)	%	81		AUTL07
8:2 FTS (Surrogate Recovery)	%	75		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006484	0908_BIOAFA057_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.		N22/006484	
Sample Reference	Units	0908_BIOAFA057_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005	AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005	AUTL07
PFOA (335-67-1)	mg/kg	<0.0003	AUTL07
PFNA (375-95-1)	mg/kg	<0.0005	AUTL07
PFDA (335-76-2)	mg/kg	<0.0005	AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTL07
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTL07
PFTeDA (376-06-7)	mg/kg	<0.001	AUTL07
PFBS (375-73-5)	mg/kg	<0.0005	AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTL07
PFHxS (355-46-4)	mg/kg	<0.0005	AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005	AUTL07
PFOS (1763-23-1)	mg/kg	0.014	AUTL07
PFNS (68259-12-1)	mg/kg	<0.001	AUTL07
PFDS (335-77-3)	mg/kg	<0.001	AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005	AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTL07
PFBA (Surrogate Recovery)	%	99	AUTL07
PFPeA (Surrogate Recovery)	%	92	AUTL07
PFHxA (Surrogate Recovery)	%	94	AUTL07
PFHpA (Surrogate Recovery)	%	86	AUTL07
PFOA (Surrogate Recovery)	%	89	AUTL07



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Lab Reg No.		N22/006484		
Sample Reference	Units	0908_BIOAFA057_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	86		AUTL07
PFDA (Surrogate Recovery)	%	100		AUTL07
PFUnDA (Surrogate Recovery)	%	111		AUTL07
PFDoDA (Surrogate Recovery)	%	92		AUTL07
PFTeDA (Surrogate Recovery)	%	100		AUTL07
PFBS (Surrogate Recovery)	%	97		AUTL07
PFHxS (Surrogate Recovery)	%	90		AUTL07
PFOS (Surrogate Recovery)	%	87		AUTL07
PFOSA (Surrogate Recovery)	%	88		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	67		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	120		AUTL07
4:2 FTS (Surrogate Recovery)	%	95		AUTL07
6:2 FTS (Surrogate Recovery)	%	85		AUTL07
8:2 FTS (Surrogate Recovery)	%	80		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006485	0908_BIOAFA058_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.	Sample Reference	Units	N22/006485 0908_BIOAFA058_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFBA (375-22-4)	mg/kg	<0.0005		AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005		AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005		AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005		AUTL07
PFOA (335-67-1)	mg/kg	<0.0003		AUTL07
PFNA (375-95-1)	mg/kg	<0.0005		AUTL07
PFDA (335-76-2)	mg/kg	<0.0005		AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005		AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005		AUTL07
PFTTrDA (72629-94-8)	mg/kg	<0.001		AUTL07
PFTeDA (376-06-7)	mg/kg	<0.001		AUTL07
PFBS (375-73-5)	mg/kg	<0.0005		AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005		AUTL07
PFHxS (355-46-4)	mg/kg	<0.0005		AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005		AUTL07
PFOS (1763-23-1)	mg/kg	0.013		AUTL07
PFNS (68259-12-1)	mg/kg	<0.001		AUTL07
PFDS (335-77-3)	mg/kg	<0.001		AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005		AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005		AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005		AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.0005		AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005		AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005		AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.0005		AUTL07
PFBA (Surrogate Recovery)	%	109		AUTL07
PFPeA (Surrogate Recovery)	%	94		AUTL07
PFHxA (Surrogate Recovery)	%	98		AUTL07
PFHpA (Surrogate Recovery)	%	82		AUTL07
PFOA (Surrogate Recovery)	%	96		AUTL07

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Lab Reg No.		N22/006485		
Sample Reference	Units	0908_BIOAFA058_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	88		AUTL07
PFDA (Surrogate Recovery)	%	98		AUTL07
PFUnDA (Surrogate Recovery)	%	114		AUTL07
PFDoDA (Surrogate Recovery)	%	92		AUTL07
PFTeDA (Surrogate Recovery)	%	93		AUTL07
PFBS (Surrogate Recovery)	%	92		AUTL07
PFHxS (Surrogate Recovery)	%	90		AUTL07
PFOS (Surrogate Recovery)	%	105		AUTL07
PFOSA (Surrogate Recovery)	%	94		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	85		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	127		AUTL07
4:2 FTS (Surrogate Recovery)	%	83		AUTL07
6:2 FTS (Surrogate Recovery)	%	86		AUTL07
8:2 FTS (Surrogate Recovery)	%	89		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006486	0908_BIOAFA059_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.		N22/006486	
Sample Reference	Units	0908_BIOAFA059_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005	AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005	AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003	AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005	AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005	AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001	AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005	AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTLO7
PFHxS (355-46-4)	mg/kg	<0.0005	AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005	AUTLO7
PFOS (1763-23-1)	mg/kg	0.013	AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001	AUTLO7
PFDS (335-77-3)	mg/kg	<0.001	AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005	AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTLO7
PFBA (Surrogate Recovery)	%	103	AUTLO7
PFPeA (Surrogate Recovery)	%	98	AUTLO7
PFHxA (Surrogate Recovery)	%	101	AUTLO7
PFHpA (Surrogate Recovery)	%	94	AUTLO7
PFOA (Surrogate Recovery)	%	98	AUTLO7

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Lab Reg No.		N22/006486		
Sample Reference	Units	0908_BIOAFA059_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	94		AUTL07
PFDA (Surrogate Recovery)	%	110		AUTL07
PFUnDA (Surrogate Recovery)	%	122		AUTL07
PFDoDA (Surrogate Recovery)	%	106		AUTL07
PFTeDA (Surrogate Recovery)	%	104		AUTL07
PFBS (Surrogate Recovery)	%	100		AUTL07
PFHxS (Surrogate Recovery)	%	93		AUTL07
PFOS (Surrogate Recovery)	%	94		AUTL07
PFOSA (Surrogate Recovery)	%	93		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	77		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	106		AUTL07
4:2 FTS (Surrogate Recovery)	%	94		AUTL07
6:2 FTS (Surrogate Recovery)	%	84		AUTL07
8:2 FTS (Surrogate Recovery)	%	75		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006487	0908_BIOAFA060_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.	Sample Reference	Units	N22/006487 0908_BIOAFA060_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFBA (375-22-4)	mg/kg	<0.0005		AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005		AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005		AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005		AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003		AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005		AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005		AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005		AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005		AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001		AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001		AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005		AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005		AUTLO7
PFHxS (355-46-4)	mg/kg	<0.0005		AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005		AUTLO7
PFOS (1763-23-1)	mg/kg	0.0021		AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001		AUTLO7
PFDS (335-77-3)	mg/kg	<0.001		AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005		AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005		AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005		AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005		AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005		AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005		AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005		AUTLO7
PFBA (Surrogate Recovery)	%	95		AUTLO7
PFPeA (Surrogate Recovery)	%	93		AUTLO7
PFHxA (Surrogate Recovery)	%	93		AUTLO7
PFHpA (Surrogate Recovery)	%	87		AUTLO7
PFOA (Surrogate Recovery)	%	98		AUTLO7

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Lab Reg No.		N22/006487		
Sample Reference	Units	0908_BIOAFA060_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	88		AUTL07
PFDA (Surrogate Recovery)	%	89		AUTL07
PFUnDA (Surrogate Recovery)	%	100		AUTL07
PFDoDA (Surrogate Recovery)	%	94		AUTL07
PFTeDA (Surrogate Recovery)	%	111		AUTL07
PFBS (Surrogate Recovery)	%	108		AUTL07
PFHxS (Surrogate Recovery)	%	92		AUTL07
PFOS (Surrogate Recovery)	%	92		AUTL07
PFOSA (Surrogate Recovery)	%	100		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	76		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	143		AUTL07
4:2 FTS (Surrogate Recovery)	%	132		AUTL07
6:2 FTS (Surrogate Recovery)	%	103		AUTL07
8:2 FTS (Surrogate Recovery)	%	117		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006488	0908_BIOAFA061_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.	Sample Reference	Units	N22/006488 0908_BIOAFA061_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFBA (375-22-4)	mg/kg	<0.0005		AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005		AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005		AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005		AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003		AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005		AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005		AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005		AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005		AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001		AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001		AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005		AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005		AUTLO7
PFHxS (355-46-4)	mg/kg	<0.0005		AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005		AUTLO7
PFOS (1763-23-1)	mg/kg	0.0046		AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001		AUTLO7
PFDS (335-77-3)	mg/kg	<0.001		AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005		AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005		AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005		AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005		AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005		AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005		AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005		AUTLO7
PFBA (Surrogate Recovery)	%	91		AUTLO7
PFPeA (Surrogate Recovery)	%	97		AUTLO7
PFHxA (Surrogate Recovery)	%	96		AUTLO7
PFHpA (Surrogate Recovery)	%	91		AUTLO7
PFOA (Surrogate Recovery)	%	93		AUTLO7



## REPORT OF ANALYSIS

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Lab Reg No.		N22/006488		
Sample Reference	Units	0908_BIOAFA061_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	89		AUTL07
PFDA (Surrogate Recovery)	%	92		AUTL07
PFUnDA (Surrogate Recovery)	%	100		AUTL07
PFDoDA (Surrogate Recovery)	%	84		AUTL07
PFTeDA (Surrogate Recovery)	%	76		AUTL07
PFBS (Surrogate Recovery)	%	119		AUTL07
PFHxS (Surrogate Recovery)	%	115		AUTL07
PFOS (Surrogate Recovery)	%	99		AUTL07
PFOSA (Surrogate Recovery)	%	97		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	91		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	90		AUTL07
4:2 FTS (Surrogate Recovery)	%	154		AUTL07
6:2 FTS (Surrogate Recovery)	%	106		AUTL07
8:2 FTS (Surrogate Recovery)	%	87		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07

N22/006488

Internal standard recoveries are outside the acceptable range of 50-150%  
due to matrix interference for: 4:2 FTS



██████████ Analyst  
Australian Ultra Trace Laboratory

06-JUN-2022

## REPORT OF ANALYSIS

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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006489	0908_BIOAFA062_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.		N22/006489	
Sample Reference	Units	0908_BIOAFA062_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005	AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005	AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003	AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005	AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005	AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001	AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005	AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTLO7
PFHxS (355-46-4)	mg/kg	<0.0005	AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005	AUTLO7
PFOS (1763-23-1)	mg/kg	0.0014	AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001	AUTLO7
PFDS (335-77-3)	mg/kg	<0.001	AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005	AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTLO7
PFBA (Surrogate Recovery)	%	96	AUTLO7
PFPeA (Surrogate Recovery)	%	89	AUTLO7
PFHxA (Surrogate Recovery)	%	96	AUTLO7
PFHpA (Surrogate Recovery)	%	90	AUTLO7
PFOA (Surrogate Recovery)	%	87	AUTLO7

# REPORT OF ANALYSIS

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Report No. RN1354026

Lab Reg No.		N22/006489		
Sample Reference	Units	0908_BIOAFA062_220223		Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	89		AUTL07
PFDA (Surrogate Recovery)	%	86		AUTL07
PFUnDA (Surrogate Recovery)	%	106		AUTL07
PFDoDA (Surrogate Recovery)	%	105		AUTL07
PFTeDA (Surrogate Recovery)	%	97		AUTL07
PFBS (Surrogate Recovery)	%	93		AUTL07
PFHxS (Surrogate Recovery)	%	84		AUTL07
PFOS (Surrogate Recovery)	%	86		AUTL07
PFOSA (Surrogate Recovery)	%	83		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	83		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	128		AUTL07
4:2 FTS (Surrogate Recovery)	%	136		AUTL07
6:2 FTS (Surrogate Recovery)	%	113		AUTL07
8:2 FTS (Surrogate Recovery)	%	87		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07



██████████ Analyst  
Australian Ultra Trace Laboratory

06-JUN-2022

## REPORT OF ANALYSIS

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Report No. RN1354026

<b>Client</b> : AECOM AUSTRALIA PTY LTD 17 WARABROOK BOULEVARD WARABROOK NSW 2304  <b>Attention</b> : ██████████ <b>Project Name</b> : <b>Your Client Services Manager</b> : ██████████	<b>Job No.</b> : AECO01/220411 <b>Quote No.</b> : QT-02018 <b>Order No.</b> : <b>Date Sampled</b> : <b>Date Received</b> : 11-APR-2022 <b>Sampled By</b> : CLIENT  <b>Phone</b> : 02 9449 0169
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Lab Reg No.	Sample Ref	Sample Description
N22/006490	0908_BIOAFA063_220223	MUSCLE/SKIN 23-24/02/2022

Lab Reg No.		N22/006490	
Sample Reference	Units	0908_BIOAFA063_220223	Method
<b>PFAS (per-and poly-fluoroalkyl substances)</b>			
PFBA (375-22-4)	mg/kg	<0.0005	AUTLO7
PFPeA (2706-90-3)	mg/kg	<0.0005	AUTLO7
PFHxA (307-24-4)	mg/kg	<0.0005	AUTLO7
PFHpA (375-85-9)	mg/kg	<0.0005	AUTLO7
PFOA (335-67-1)	mg/kg	<0.0003	AUTLO7
PFNA (375-95-1)	mg/kg	<0.0005	AUTLO7
PFDA (335-76-2)	mg/kg	<0.0005	AUTLO7
PFUnDA (2058-94-8)	mg/kg	<0.0005	AUTLO7
PFDoDA (307-55-1)	mg/kg	<0.0005	AUTLO7
PFTTrDA (72629-94-8)	mg/kg	<0.001	AUTLO7
PFTeDA (376-06-7)	mg/kg	<0.001	AUTLO7
PFBS (375-73-5)	mg/kg	<0.0005	AUTLO7
PFPeS (2706-91-4)	mg/kg	<0.0005	AUTLO7
PFHxS (355-46-4)	mg/kg	<0.0005	AUTLO7
PFHpS (375-92-8)	mg/kg	<0.0005	AUTLO7
PFOS (1763-23-1)	mg/kg	0.0019	AUTLO7
PFNS (68259-12-1)	mg/kg	<0.001	AUTLO7
PFDS (335-77-3)	mg/kg	<0.001	AUTLO7
PFOSA (754-91-6)	mg/kg	<0.0005	AUTLO7
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	AUTLO7
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	AUTLO7
4:2 FTS (757124-72-4)	mg/kg	<0.0005	AUTLO7
6:2 FTS (27619-97-2)	mg/kg	<0.0005	AUTLO7
8:2 FTS (39108-34-4)	mg/kg	<0.0005	AUTLO7
10:2 FTS (120226-60-0)	mg/kg	<0.0005	AUTLO7
PFBA (Surrogate Recovery)	%	91	AUTLO7
PFPeA (Surrogate Recovery)	%	92	AUTLO7
PFHxA (Surrogate Recovery)	%	97	AUTLO7
PFHpA (Surrogate Recovery)	%	86	AUTLO7
PFOA (Surrogate Recovery)	%	97	AUTLO7

## REPORT OF ANALYSIS

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Report No. RN1354026

Lab Reg No.		N22/006490		
Sample Reference	Units	0908_BIOAFA063_220223		Method
<b>PFAS (per- and poly-fluoroalkyl substances)</b>				
PFNA (Surrogate Recovery)	%	83		AUTL07
PFDA (Surrogate Recovery)	%	90		AUTL07
PFUnDA (Surrogate Recovery)	%	93		AUTL07
PFDoDA (Surrogate Recovery)	%	88		AUTL07
PFTeDA (Surrogate Recovery)	%	73		AUTL07
PFBS (Surrogate Recovery)	%	108		AUTL07
PFHxS (Surrogate Recovery)	%	104		AUTL07
PFOS (Surrogate Recovery)	%	91		AUTL07
PFOSA (Surrogate Recovery)	%	83		AUTL07
N-MeFOSAA (Surrogate Recovery)	%	79		AUTL07
N-EtFOSAA (Surrogate Recovery)	%	126		AUTL07
4:2 FTS (Surrogate Recovery)	%	153		AUTL07
6:2 FTS (Surrogate Recovery)	%	111		AUTL07
8:2 FTS (Surrogate Recovery)	%	93		AUTL07
Date Extracted		11-MAY-2022 00:00		AUTL07
Date Analysed		13-MAY-2022 00:00		AUTL07

N22/006490

Internal standard recoveries are outside the acceptable range of 50-150% due to matrix interference for: 4:2 FTS



██████████ Analyst  
Australian Ultra Trace Laboratory

06-JUN-2022

All results are reported on a wet weight basis as received, and are corrected for labelled internal standard recoveries.

PFHxS and PFOS were quantified using combined branched and linear standards, for all PFAS linear and branched isomers in samples are totalled for reporting.

Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

This Report shall not be reproduced except in full.



Laboratory Blank	10733
Blank concentration	mg/kg
PFBA (375-22-4)	<0.0005
PFPeA (2706-90-3)	<0.0005
PFHxA (307-24-4)	<0.0005
PFHpA (375-85-9)	<0.0005
PFOA (335-67-1)	<0.0003
PFNA (375-95-1)	<0.0005
PFDA (335-76-2)	<0.0005
PFUnDA (2058-94-8)	<0.0005
PFDoDA (307-55-1)	<0.0005
PFTeDA (376-06-7)	<0.001
PFBS (375-73-5)	<0.0005
PFPeS (2706-91-4)	<0.0005
PFHxS (355-46-4)	<0.0005
PFHpS (375-92-8)	<0.0005
PFOS (1763-23-1)	<0.001
PFNS (68259-12-1)	<0.001
PFDS (335-77-3)	<0.001
PFOSA (754-91-6)	<0.0005
4:2 FTS (757124-72-4)	<0.0005
6:2 FTS (27619-97-2)	<0.0005
8:2 FTS (39108-34-4)	<0.0005
10:2 FTS (120226-60-0)	<0.0005
N-MeFOSAA (2355-31-9)	<0.0005
N-EtFOSAA(2991-50-6)	<0.0005
Surrogate recovery	%
PFBA (Surrogate Recovery)	85%
PFPeA (Surrogate Recovery)	92%
PFHxA (Surrogate Recovery)	87%
PFHpA (Surrogate Recovery)	84%
PFNA (Surrogate Recovery)	86%
PFOA (Surrogate Recovery)	90%
PFDA (Surrogate Recovery)	93%
PFUnDA (Surrogate Recovery)	99%
PFDoDA (Surrogate Recovery)	80%
PFTeDA (Surrogate Recovery)	85%
PFBS (Surrogate Recovery)	86%
PFHxS (Surrogate Recovery)	82%
PFOS (Surrogate Recovery)	87%
PFOSA (Surrogate Recovery)	89%
4:2 FTS (Surrogate Recovery)	97%
6:2 FTS (Surrogate Recovery)	81%
8:2 FTS (Surrogate Recovery)	80%
N-MeFOSAA (Surrogate Recovery)	84%
N-EtFOSAA (Surrogate Recovery)	90%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

Lab Control Spike	10733
Native Spike recovery	%
PFBA (375-22-4)	83%
PFPeA (2706-90-3)	91%
PFHxA (307-24-4)	95%
PFHpA (375-85-9)	86%
PFOA (335-67-1)	89%
PFNA (375-95-1)	96%
PFDA (335-76-2)	89%
PFUnDA (2058-94-8)	94%
PFDoDA (307-55-1)	97%
PFTeDA (376-06-7)	89%
PFBS (375-73-5)	85%
PFPeS (2706-91-4)	83%
PFHxS (355-46-4)	92%
PFHpS (375-92-8)	84%
PFOS (1763-23-1)	103%
PFNS (68259-12-1)	99%
PFDS (335-77-3)	88%
PFOSA (754-91-6)	79%
4:2 FTS (757124-72-4)	80%
6:2 FTS (27619-97-2)	75%
8:2 FTS (39108-34-4)	89%
10:2 FTS (120226-60-0)	62%
N-MeFOSAA (2355-31-9)	115%
N-EtFOSAA(2991-50-6)	84%
Surrogate recovery	%
PFBA (Surrogate Recovery)	91%
PFPeA (Surrogate Recovery)	95%
PFHxA (Surrogate Recovery)	104%
PFHpA (Surrogate Recovery)	105%
PFNA (Surrogate Recovery)	90%
PFOA (Surrogate Recovery)	103%
PFDA (Surrogate Recovery)	96%
PFUnDA (Surrogate Recovery)	102%
PFDoDA (Surrogate Recovery)	88%
PFTeDA (Surrogate Recovery)	91%
PFBS (Surrogate Recovery)	100%
PFHxS (Surrogate Recovery)	88%
PFOS (Surrogate Recovery)	95%
PFOSA (Surrogate Recovery)	100%
4:2 FTS (Surrogate Recovery)	100%
6:2 FTS (Surrogate Recovery)	96%
8:2 FTS (Surrogate Recovery)	88%
N-MeFOSAA (Surrogate Recovery)	83%
N-EtFOSAA (Surrogate Recovery)	104%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

PFAS Quality Assurance Report

Duplicate sample A	10733
Shellfish (Muscle/vein)	N22/006479D
Relative Percentage Deviation %	
PFBA (375-22-4)	<LOR
PFPeA (2706-90-3)	<LOR
PFHxA (307-24-4)	<LOR
PFHpA (375-85-9)	<LOR
PFOA (335-67-1)	<LOR
PFNA (375-95-1)	<LOR
PFDA (335-76-2)	<LOR
PFUnDA (2058-94-8)	<LOR
PFDoDA (307-55-1)	<LOR
PFTeDA (376-06-7)	<LOR
PFBS (375-73-5)	<LOR
PFPeS (2706-91-4)	<LOR
PFHxS (355-46-4)	0.4%
PFHpS (375-92-8)	<LOR
PFOS (1763-23-1)	10%
PFNS (68259-12-1)	<LOR
PFDS (335-77-3)	<LOR
PFOSA (754-91-6)	<LOR
4:2 FTS (757124-72-4)	<LOR
6:2 FTS (27619-97-2)	<LOR
8:2 FTS (39108-34-4)	<LOR
10:2 FTS (120226-60-0)	<LOR
N-MeFOSAA (2355-31-9)	<LOR
N-EtFOSAA(2991-50-6)	<LOR
Surrogate recovery	%
PFBA (Surrogate Recovery)	100%
PFPeA (Surrogate Recovery)	72%
PFHxA (Surrogate Recovery)	75%
PFHpA (Surrogate Recovery)	91%
PFNA (Surrogate Recovery)	112%
PFOA (Surrogate Recovery)	97%
PFDA (Surrogate Recovery)	88%
PFUnDA (Surrogate Recovery)	102%
PFDoDA (Surrogate Recovery)	90%
PFTeDA (Surrogate Recovery)	87%
PFBS (Surrogate Recovery)	92%
PFHxS (Surrogate Recovery)	95%
PFOS (Surrogate Recovery)	99%
PFOSA (Surrogate Recovery)	92%
4:2 FTS (Surrogate Recovery)	83%
6:2 FTS (Surrogate Recovery)	135%
8:2 FTS (Surrogate Recovery)	104%
N-MeFOSAA (Surrogate Recovery)	111%
N-EtFOSAA (Surrogate Recovery)	125%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

Duplicate sample B	10733
Fish (Muscle/skin)	N22/006483D
Relative Percentage Deviation %	
PFBA (375-22-4)	<LOR
PFPeA (2706-90-3)	<LOR
PFHxA (307-24-4)	<LOR
PFHpA (375-85-9)	<LOR
PFOA (335-67-1)	<LOR
PFNA (375-95-1)	<LOR
PFDA (335-76-2)	<LOR
PFUnDA (2058-94-8)	<LOR
PFDoDA (307-55-1)	<LOR
PFTeDA (376-06-7)	<LOR
PFBS (375-73-5)	<LOR
PFPeS (2706-91-4)	<LOR
PFHxS (355-46-4)	<LOR
PFHpS (375-92-8)	<LOR
PFOS (1763-23-1)	8%
PFNS (68259-12-1)	<LOR
PFDS (335-77-3)	<LOR
PFOSA (754-91-6)	<LOR
4:2 FTS (757124-72-4)	<LOR
6:2 FTS (27619-97-2)	<LOR
8:2 FTS (39108-34-4)	<LOR
10:2 FTS (120226-60-0)	<LOR
N-MeFOSAA (2355-31-9)	<LOR
N-EtFOSAA(2991-50-6)	<LOR
Surrogate recovery	%
PFBA (Surrogate Recovery)	93%
PFPeA (Surrogate Recovery)	97%
PFHxA (Surrogate Recovery)	94%
PFHpA (Surrogate Recovery)	92%
PFNA (Surrogate Recovery)	86%
PFOA (Surrogate Recovery)	95%
PFDA (Surrogate Recovery)	109%
PFUnDA (Surrogate Recovery)	124%
PFDoDA (Surrogate Recovery)	95%
PFTeDA (Surrogate Recovery)	84%
PFBS (Surrogate Recovery)	103%
PFHxS (Surrogate Recovery)	97%
PFOS (Surrogate Recovery)	95%
PFOSA (Surrogate Recovery)	96%
4:2 FTS (Surrogate Recovery)	111%
6:2 FTS (Surrogate Recovery)	76%
8:2 FTS (Surrogate Recovery)	78%
N-MeFOSAA (Surrogate Recovery)	91%
N-EtFOSAA (Surrogate Recovery)	133%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

PFAS Quality Assurance Report

Duplicate sample C	10733
Fish (Muscle/skin)	N22/006487D
Relative Percentage Deviation %	
PFBA (375-22-4)	<LOR
PFPeA (2706-90-3)	<LOR
PFHxA (307-24-4)	<LOR
PFHpA (375-85-9)	<LOR
PFOA (335-67-1)	<LOR
PFNA (375-95-1)	<LOR
PFDA (335-76-2)	<LOR
PFUnDA (2058-94-8)	<LOR
PFDoDA (307-55-1)	<LOR
PFTeDA (376-06-7)	<LOR
PFBS (375-73-5)	<LOR
PFPeS (2706-91-4)	<LOR
PFHxS (355-46-4)	<LOR
PFHpS (375-92-8)	<LOR
PFOS (1763-23-1)	8%
PFNS (68259-12-1)	<LOR
PFDS (335-77-3)	<LOR
PFOSA (754-91-6)	<LOR
4:2 FTS (757124-72-4)	<LOR
6:2 FTS (27619-97-2)	<LOR
8:2 FTS (39108-34-4)	<LOR
10:2 FTS (120226-60-0)	<LOR
N-MeFOSAA (2355-31-9)	<LOR
N-EtFOSAA(2991-50-6)	<LOR
Surrogate recovery	%
PFBA (Surrogate Recovery)	101%
PFPeA (Surrogate Recovery)	103%
PFHxA (Surrogate Recovery)	102%
PFHpA (Surrogate Recovery)	91%
PFNA (Surrogate Recovery)	94%
PFOA (Surrogate Recovery)	97%
PFDA (Surrogate Recovery)	93%
PFUnDA (Surrogate Recovery)	103%
PFDoDA (Surrogate Recovery)	85%
PFTeDA (Surrogate Recovery)	100%
PFBS (Surrogate Recovery)	99%
PFHxS (Surrogate Recovery)	94%
PFOS (Surrogate Recovery)	91%
PFOSA (Surrogate Recovery)	87%
4:2 FTS (Surrogate Recovery)	123%
6:2 FTS (Surrogate Recovery)	107%
8:2 FTS (Surrogate Recovery)	140%
N-MeFOSAA (Surrogate Recovery)	95%
N-EtFOSAA (Surrogate Recovery)	139%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

Spiked sample A	10733
Shellfish	N22/006479S
Native Spike recovery	%
PFBA (375-22-4)	92%
PFPeA (2706-90-3)	96%
PFHxA (307-24-4)	107%
PFHpA (375-85-9)	117%
PFOA (335-67-1)	137%
PFNA (375-95-1)	117%
PFDA (335-76-2)	139%
PFUnDA (2058-94-8)	113%
PFDoDA (307-55-1)	119%
PFTeDA (376-06-7)	104%
PFBS (375-73-5)	108%
PFPeS (2706-91-4)	99%
PFHxS (355-46-4)	110%
PFHpS (375-92-8)	99%
PFOS (1763-23-1)	92%
PFNS (68259-12-1)	91%
PFDS (335-77-3)	93%
PFOSA (754-91-6)	111%
4:2 FTS (757124-72-4)	99%
6:2 FTS (27619-97-2)	109%
8:2 FTS (39108-34-4)	78%
10:2 FTS (120226-60-0)	90%
N-MeFOSAA (2355-31-9)	116%
N-EtFOSAA(2991-50-6)	107%
Surrogate recovery	%
PFBA (Surrogate Recovery)	92%
PFPeA (Surrogate Recovery)	67%
PFHxA (Surrogate Recovery)	68%
PFHpA (Surrogate Recovery)	79%
PFNA (Surrogate Recovery)	95%
PFOA (Surrogate Recovery)	80%
PFDA (Surrogate Recovery)	83%
PFUnDA (Surrogate Recovery)	91%
PFDoDA (Surrogate Recovery)	77%
PFTeDA (Surrogate Recovery)	76%
PFBS (Surrogate Recovery)	81%
PFHxS (Surrogate Recovery)	80%
PFOS (Surrogate Recovery)	88%
PFOSA (Surrogate Recovery)	83%
4:2 FTS (Surrogate Recovery)	71%
6:2 FTS (Surrogate Recovery)	96%
8:2 FTS (Surrogate Recovery)	97%
N-MeFOSAA (Surrogate Recovery)	87%
N-EtFOSAA (Surrogate Recovery)	115%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PFHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022



PFAS Quality Assurance Report

Spiked sample B	10733
Fish (Muscle/skin)	N22/006483S
Native Spike recovery	%
PFBA (375-22-4)	97%
PFPeA (2706-90-3)	93%
PfHxA (307-24-4)	100%
PFHpA (375-85-9)	95%
PFOA (335-67-1)	94%
PFNA (375-95-1)	102%
PFDA (335-76-2)	109%
PFUnDA (2058-94-8)	96%
PFDoDA (307-55-1)	107%
PFTeDA (376-06-7)	97%
PFBS (375-73-5)	100%
PFPeS (2706-91-4)	93%
PFHxS (355-46-4)	93%
PFHpS (375-92-8)	107%
PFOS (1763-23-1)	97%
PFNS (68259-12-1)	101%
PFDS (335-77-3)	85%
PFOSA (754-91-6)	101%
4:2 FTS (757124-72-4)	84%
6:2 FTS (27619-97-2)	86%
8:2 FTS (39108-34-4)	122%
10:2 FTS (120226-60-0)	115%
N-MeFOSAA (2355-31-9)	109%
N-EtFOSAA(2991-50-6)	104%
Surrogate recovery	%
PFBA (Surrogate Recovery)	96%
PFPeA (Surrogate Recovery)	89%
PfHxA (Surrogate Recovery)	91%
PFHpA (Surrogate Recovery)	91%
PFNA (Surrogate Recovery)	86%
PFOA (Surrogate Recovery)	95%
PFDA (Surrogate Recovery)	114%
PFUnDA (Surrogate Recovery)	133%
PFDoDA (Surrogate Recovery)	101%
PFTeDA (Surrogate Recovery)	106%
PFBS (Surrogate Recovery)	107%
PFHxS (Surrogate Recovery)	106%
PFOS (Surrogate Recovery)	104%
PFOSA (Surrogate Recovery)	109%
4:2 FTS (Surrogate Recovery)	119%
6:2 FTS (Surrogate Recovery)	80%
8:2 FTS (Surrogate Recovery)	84%
N-MeFOSAA (Surrogate Recovery)	66%
N-EtFOSAA (Surrogate Recovery)	110%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PfHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022

Spiked sample C	10733
Fish (Muscle/skin)	N22/006487S
Native Spike recovery	%
PFBA (375-22-4)	93%
PFPeA (2706-90-3)	95%
PfHxA (307-24-4)	95%
PFHpA (375-85-9)	109%
PFOA (335-67-1)	102%
PFNA (375-95-1)	101%
PFDA (335-76-2)	116%
PFUnDA (2058-94-8)	106%
PFDoDA (307-55-1)	111%
PFTeDA (376-06-7)	97%
PFBS (375-73-5)	94%
PFPeS (2706-91-4)	85%
PFHxS (355-46-4)	106%
PFHpS (375-92-8)	99%
PFOS (1763-23-1)	97%
PFNS (68259-12-1)	95%
PFDS (335-77-3)	93%
PFOSA (754-91-6)	100%
4:2 FTS (757124-72-4)	96%
6:2 FTS (27619-97-2)	77%
8:2 FTS (39108-34-4)	99%
10:2 FTS (120226-60-0)	88%
N-MeFOSAA (2355-31-9)	111%
N-EtFOSAA(2991-50-6)	107%
Surrogate recovery	%
PFBA (Surrogate Recovery)	105%
PFPeA (Surrogate Recovery)	99%
PfHxA (Surrogate Recovery)	105%
PFHpA (Surrogate Recovery)	91%
PFNA (Surrogate Recovery)	103%
PFOA (Surrogate Recovery)	101%
PFDA (Surrogate Recovery)	92%
PFUnDA (Surrogate Recovery)	103%
PFDoDA (Surrogate Recovery)	87%
PFTeDA (Surrogate Recovery)	93%
PFBS (Surrogate Recovery)	108%
PFHxS (Surrogate Recovery)	97%
PFOS (Surrogate Recovery)	93%
PFOSA (Surrogate Recovery)	103%
4:2 FTS (Surrogate Recovery)	155%
6:2 FTS (Surrogate Recovery)	130%
8:2 FTS (Surrogate Recovery)	134%
N-MeFOSAA (Surrogate Recovery)	90%
N-EtFOSAA (Surrogate Recovery)	145%
Limit of Reporting	mg/kg
PFBA (375-22-4)	0.0005
PFPeA (2706-90-3)	0.0005
PfHxA (307-24-4)	0.0005
PFHpA (375-85-9)	0.0005
PFOA (335-67-1)	0.0003
PFNA (375-95-1)	0.0005
PFDA (335-76-2)	0.0005
PFUnDA (2058-94-8)	0.0005
PFDoDA (307-55-1)	0.0005
PFTeDA (376-06-7)	0.0010
PFBS (375-73-5)	0.0005
PFPeS (2706-91-4)	0.0005
PFHxS (355-46-4)	0.0005
PFHpS (375-92-8)	0.0005
PFOS (1763-23-1)	0.0010
PFNS (68259-12-1)	0.0010
PFDS (335-77-3)	0.0010
PFOSA (754-91-6)	0.0005
4:2 FTS (757124-72-4)	0.0005
6:2 FTS (27619-97-2)	0.0005
8:2 FTS (39108-34-4)	0.0005
10:2 FTS (120226-60-0)	0.0005
N-MeFOSAA (2355-31-9)	0.0005
N-EtFOSAA(2991-50-6)	0.0005
Extracted Date	11/05/2022
LCMSMS Analysis Date	13/05/2022



## SAMPLE RECEIPT NOTIFICATION

### CUSTOMER DETAILS

**Attention:** [REDACTED]  
**Customer:** AECOM AUSTRALIA PTY LTD  
**Address:** 17 WARABROOK BOULEVARD  
WARABROOK NSW 2304  
**Email:** [REDACTED]  
**Telephone:**  
**Fax:**

### LABORATORY DETAILS

**Lab:** National Measurement Institute  
**Contact:** [REDACTED]  
**Address:** 105 Delhi Road, North Ryde, NSW  
NSW 2113  
**Email:** [REDACTED]  
**Telephone:** 02 9449 0181  
**Fax:**

### SAMPLE DETAILS

**NMI Job Name:** AECO01/220411

**Total No. of Samples:** 12

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N22/006479	25-MAY-2022	0908_BIOAFA052_220411	MUSCLE/VEIN 23/02/2022
N22/006480	25-MAY-2022	0908_BIOAFA053_220411	MUSCLE/VEIN 23/02/2022
N22/006481	25-MAY-2022	0908_BIOAFA054_220411	MUSCLE/VEIN 23/02/2022
N22/006482	25-MAY-2022	0908_BIOAFA055_220411	MUSCLE/VEIN 23/02/2022
N22/006483	25-MAY-2022	0908_BIOAFA056_220411	MUSCLE/SKIN 23-24/02/2022
N22/006484	25-MAY-2022	0908_BIOAFA057_220411	MUSCLE/SKIN 23-24/02/2022
N22/006485	25-MAY-2022	0908_BIOAFA058_220411	MUSCLE/SKIN 23-24/02/2022
N22/006486	25-MAY-2022	0908_BIOAFA059_220411	MUSCLE/SKIN 23-24/02/2022
N22/006487	25-MAY-2022	0908_BIOAFA060_220411	MUSCLE/SKIN 23-24/02/2022
N22/006488	25-MAY-2022	0908_BIOAFA061_220411	MUSCLE/SKIN 23-24/02/2022
N22/006489	25-MAY-2022	0908_BIOAFA062_220411	MUSCLE/SKIN 23-24/02/2022

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## SAMPLE RECEIVED CONDITION

Date samples received: 11-APR-2022

Sample received in good order: Yes

NMI Quotation no. provided:

Client purchase order number:

Temperature of samples: Frozen

Comments: Please provide order no for job AECO01/220411

Mode of Delivery: Courier

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## Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

**If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.**

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptance of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at

<https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions>

# NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

<b>SENT FROM:</b> [REDACTED]	Internal use only
<b>Company Name:</b> AECOM - AECO03 NSW	<b>NMI Quote Number:</b> AECO01_03_04_05_06_08_09A-TL1807N AECOM (PFAS in Biota_Water_Sediment)
<b>Address:</b> PO Box 73 Hunter Region MC NSW 2310	<b>LIMS Reference:</b> _____ <b>Valid until:</b> _____
<b>Contact:</b> [REDACTED] <b>Additional email(s) for report / invoice (if required):</b> _____	<b>TURN AROUND TIME REQUESTED (Working days):</b> 24 hrs 48 hrs 3-4 5-7 10 20 other (please specify) 100% 50% 25% Standard dioxins <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
<b>Phone:</b> [REDACTED]	*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission ✓ 25/5 AECO01/220411
<b>ABN:</b> [REDACTED]	
<b>Contact email:</b> [REDACTED] <b>INVOICE TO:</b> AP_CustomerService.ANZ@aecom.com	

If a PO number is required on your invoice, it must be provided at sample submission. PO's received after sample submission will not appear on final invoice Purchase order required: **N** PO Number: \_\_\_\_\_

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	Matrix	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)												COMMENTS			
				NUM	PFAS	D	F	A	S	D	F	A	S	D	F		A	S	
N22/006479	0908_BIOAFA052_220405	23/02/2022	Muscle/vein																STORAGED IN (F2) - Am
N22/006480	0908_BIOAFA053_220405	23/02/2022	Muscle/vein																
N22/006481	0908_BIOAFA054_220405	23/02/2022	Muscle/vein																
N22/006482	0908_BIOAFA055_220405	23/02/2022	Muscle/vein																
N22/006483	0908_BIOAFA056_220406	23-24/02/2022	Muscle/skin																
N22/006484	0908_BIOAFA057_220406	23-24/02/2022	Muscle/skin																
N22/006485	0908_BIOAFA058_220406	23-24/02/2022	Muscle/skin																
N22/006486	0908_BIOAFA059_220406	23-24/02/2022	Muscle/skin																
N22/006487	0908_BIOAFA060_220406	23-24/02/2022	Muscle/skin																
N22/006488	0908_BIOAFA061_220406	23-24/02/2022	Muscle/skin																
N22/006489	0908_BIOAFA062_220406	23-24/02/2022	Muscle/skin																
N22/006490	0908_BIOAFA063_220406	23-24/02/2022	Muscle/skin																

**RECEIVED**  
 11 APR 2022  
 BY: [Signature] F

When providing samples to NMI, you must give written notice of all known safety or health hazards and special procedures relevant to the handling, testing, storage, transport and disposal of samples. NMI reserves the right to refuse to conduct any test where NMI in its absolute discretion determines such testing may pose a safety or health hazard.

<b>Relinquished by:</b> Print Name: [REDACTED] Date & Time: _____ Signature: [Signature]	<b>Received at NMI laboratory by:</b> Print Name: _____ Date & Time: _____ hrs Signature: _____	<b>PAGE No:</b> 1 of 1 PAGES  If multiple pages, ensure ALL pages are stapled together
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11/04/22 4:21



# NMI CHAIN OF CUSTODY (SAMPLE SUBMISSION) FORM

ENVIRONMENTAL SAMPLES to be submitted to:

NMI: 105 Delhi Rd, North Ryde NSW 2113 Ph: 1300 722 845 email: customerservice@measurement.gov.au

SENT FROM:		Internal use only
Company Name:		NMI Quote Number: AECO01_03_04_05_06_08_09A-TL1807N AECOM (PFAS in Biota_Water_Sediment)
Address:		LIMS Reference: Valid until:
Contact:	Additional email(s) for report / invoice (if required):	TURN AROUND TIME REQUESTED (Working days):
Phone:		24 hrs 48 hrs 3-4 5-7 10 20 other (please specify)
ABN:		100% 50% 25% Standard dioxins
Contact email:	INVOICE TO : AP_CustomerService.ANZ@aecom.com	*Fast TATs are not available for all tests and MUST be agreed to prior to sample submission

✓ 25/5  
AECO01/220411  
P2

If a PO number is required on your invoice, it must be provided at sample submission. PO's received after sample submission will not appear on final invoice Purchase order required: **N** PO Number: \_\_\_\_\_

NMI LRN (NMI USE ONLY - please do not write in this column)	SAMPLE REFERENCE (Sample ID / Description / Number)	DATE & TIME SAMPLED	Matrix	TESTS REQUIRED (Please list all tests required here and tick required tests against samples)												COMMENTS			
				NUM	PFAS	D	F	A	S	D	F	A	S	D	F		A	S	
N22/006479	0908_BIOAFA052_220405	23/02/2022	Muscle/vein																STORAGED IN (F2) - P2
N22/006480	0908_BIOAFA053_220405	23/02/2022	Muscle/vein																
N22/006481	0908_BIOAFA054_220405	23/02/2022	Muscle/vein																
N22/006482	0908_BIOAFA055_220405	23/02/2022	Muscle/vein																
N22/006483	0908_BIOAFA056_220406	23-24/02/2022	Muscle/skin																
N22/006484	0908_BIOAFA057_220406	23-24/02/2022	Muscle/skin																
N22/006485	0908_BIOAFA058_220406	23-24/02/2022	Muscle/skin																
N22/006486	0908_BIOAFA059_220406	23-24/02/2022	Muscle/skin																
N22/006487	0908_BIOAFA060_220406	23-24/02/2022	Muscle/skin																
N22/006488	0908_BIOAFA061_220406	23-24/02/2022	Muscle/skin																
N22/006489	0908_BIOAFA062_220406	23-24/02/2022	Muscle/skin																
N22/006490	0908_BIOAFA063_220406	23-24/02/2022	Muscle/skin																

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When providing samples to NMI, you must give written notice of all known safety or health hazards and special procedures relevant to the handling, testing, storage, transport and disposal of samples. NMI reserves the right to refuse to conduct any test where NMI in its absolute discretion determines such testing may pose a safety or health hazard.

Relinquished by:	Received at NMI laboratory by:	PAGE No: 1 of 1 PAGES
Print Name:	Print Name:	
Date & Time:	Date & Time:	
Signature:	Signature:	If multiple pages, ensure ALL pages are stapled together

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# Appendix D

## Data Validation

LABORATORY DATA VALIDATION REPORT	
<b>Project number:</b>	60612562
<b>Client:</b>	Defence
<b>Site:</b>	Fullerton Cove
<b>Matrix type:</b>	Biota
<b>Primary Samples:</b>	12 Composite Biota Samples
<b>Laboratory:</b>	National Measurement Institute (NMI)
<b>Lab reference:</b>	AECO01_220411/ RN1354026
<b>Validation by:</b>	██████████
<b>Date:</b>	07/06/2022
<b>Data verified by:</b>	██████████
<b>Date:</b>	07/06/2022
<b>Project Manager:</b>	██████████
<b>Key Issues:</b>	No issues were identified that have the potential to impact upon the reliability of the Data. AECOM considers that the field procedures and laboratory QA/QC processes employed were appropriate for the purposes of the investigation.
Field Quality Assurance and Quality Controls	
Sampling personnel	Samples were collected by an AECOM subcontractor (NSW Department of Primary Industries (DPI), Port Stephens Fisheries Institute (Fisheries)).
Sampling Methodology	<p>Aquatic biota samples were captured utilising the following process:</p> <ul style="list-style-type: none"> <li>Boats were used to deploy mesh netting. Nets were placed in the target locations and collected within 3 hours for Luderick and Ducky Flathead. School prawns were captured using an otter trawl net.</li> <li>Target specimens were retrieved from the nets and euthanised by ice and water.</li> <li>Target specimens were placed in labelled plastic bags and transported to the Port Stephens Fisheries Institute on ice in an esky.</li> <li>Target specimen metrics (length, weight, bag number) were recorded at the Fisheries Institute by DPI.</li> </ul>
Chain of Custody	<p>All samples taken were reported on the Chain of Custody documents (COC) and analysed for requested analytes.</p> <p>Note: The original laboratory report RN1352415 was superseded by RN1354026, to include updated Field IDs.</p>
Rinsate Blank (RB)	No Rinsate Blanks were included with this batch given nets were used to catch samples.
Frequency of field QC	As per the SAQP, no duplicate samples were collected as the samples were being composited. Individual specimens of the composite samples were retained to validate composite results as required.
Handling and preservation	<p>It is noted that all biota samples were stored frozen before being submitted and shipped to the laboratory frozen, and in suitable conditions.</p> <p>All biota samples were received by NMI laboratories in appropriate containers.</p> <p>Sample homogenisation and preparation for analysis were undertaken in the laboratory.</p>

Calibration of equipment	Measurement of groundwater geochemical parameters was undertaken by NSW DPI. Calibration details have not been provided by NSW DPI.
<b>Laboratory Quality Assurance and Quality Controls</b>	
Tests requested/reported	All biota samples were analysed for the PFAS (25 analytes).
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory	Aquatic Biota samples were analysed at the National Measurement Institute (NMI, Sydney), a NATA accredited laboratory (accreditation number 198).
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision.
Method Blank (MB)	Method Blank concentrations were reported <LOR for all analytes tested. MB concentrations are presented in the laboratory Quality Assurance Report.
Laboratory Duplicate (LD) Relative Percent Difference (RPD)	Laboratory Duplicate Relative Percentage Differences were within the laboratory control limits. The LD RPDs are presented in the laboratory Quality Assurance Report.
Laboratory Control Spike (LCS) recovery	Laboratory Control Spikes recoveries were within the laboratory control limits. LCS recoveries are presented in the laboratory Quality Assurance Report.
Matrix Spike (MS) recovery	Matrix Spikes recoveries were within the laboratory control limits. MS recoveries are presented in the laboratory Quality Assurance Report.
Surrogate spike (SS) recovery	<p>Surrogate Spike recoveries were within the laboratory control limits (50-150%) with the exception of 4:2 FTS (154%) in sample 0908_BIOAFA061_220223 and 4:2 FTS (153%) in sample 0908_BIOAFA063_220223, due to matrix interference. SS recoveries are presented in the laboratory Quality Assurance Report.</p> <p>It is noted that these SS recoveries are only marginally outside of control limits and, furthermore, the SS recoveries for PFOS and PFHxS were within the acceptable range for the analysed samples, and as such the minor non-compliance is not considered to affect the interpretation of results.</p>
<b>Quality Assurance and Quality Controls Data Evaluation</b>	
Comparison of Esdat data and Laboratory Results	No anomalous results between Esdat output data and laboratory analysis results were noted.
Data transcription	A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	Limits of Reporting (LORs) were sufficiently low to enable assessment against adopted human health screening levels and were consistent with Defence (2018) <i>Guidance Document E Standard PFAS Analytical Suite</i> requirements.
<b>Comments</b>	
The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.	



# Sampling Event Factual Report, May 2022

PFAS OMP - RAAF Base Williamtown

25-Nov-2022

Doc No. 20221125\_OMP002\_WLM\_SamplingEventFactualReport\_Rev0

# Sampling Event Factual Report, May 2022

PFAS OMP - RAAF Base Williamtown

Client: Department of Defence

ABN: 68706814312

Prepared by

**AECOM Australia Pty Ltd**

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25-Nov-2022

Job No.: 60612562

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

## Quality Information

Document      Sampling Event Factual Report, May 2022

Ref              60612562

Date            25-Nov-2022

### Revision History

Rev	Revision Date	Details
A	11/10/2022	Draft
B	09-Nov-2022	Draft
0	25-Nov-2022	Final

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## List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
AIR	Annual Interpretive Report
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
GWE	Groundwater Elevation
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
LOR	Limit of Reporting
MW	Monitoring Well
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
PFAS	Per- and poly-fluoroalkyl substances
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFHxS	Perfluorohexanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAQP	Sample and Analysis Quality Plan
SD	Sediment

Acronym	Term
STP	Sewage Treatment Plant
SW	Surface Water
SWL	Standing Water Level
EC	Electrical Conductivity
DO	Dissolved Oxygen
ORP	Oxidation Reduction Potential

## List of Units

Units	Term
µg/L	Micrograms per Litre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre

## 1.0 Introduction

### 1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan at the RAAF Base Williamtown (the 'Site') and the Williamtown Management Area in the NSW & JBT Region. The location of the Site and Management Area is shown in **Figure F1** in **Appendix A**.

The OMP (AECOM, 2019) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Annual interpretive reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the May 2022 annual sampling event, specifically highlighting first time detections and/or new exceedances of human health or ecological screening criteria for PFOS+PFHxS, PFOS and/or PFOA.

This report has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance (Version 0.2)* issued in May 2021 (Defence, 2021).

### 1.2 Objectives

The objectives were to:

- Implement the OMP (AECOM, 2019) prepared as part of the Detailed Environmental Investigations; and
- Collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of PFAS.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

The objective of this phase of works was to implement the scope of works for the May 2022 annual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).



## 2.0 Scope of Work

The scope of works was completed generally in accordance with the SAQP (AECOM, 2022), as follows:

- obtain permission (where required) to conduct works at the Site, off-site publicly accessible areas and commercial properties, and at private properties
- gauging of groundwater level in monitoring wells prior to collection of samples
- groundwater sampling and collection of water quality parameters at 130 monitoring wells and bores (refer to **Table 1** below and **Figures F2-1 to F2-4** in **Appendix A** for specific locations), noting that samples from 27 locations could not be collected during this sampling event (refer to **Table 10** for further details)
- surface water sampling and collection of water quality parameters at 20 locations (refer to **Table 2** below and **Figure F3** in **Appendix A** for specific locations), noting that samples from 3 locations could not be collected during this sampling event (refer to **Table 10** for further details)
- sediment sampling at 23 locations (refer to **Table 3** below and **Figure F4** in **Appendix A** for specific locations), noting that samples from 3 sediment locations could not be collected during this sampling event (refer to **Table 10** for further details)
- soil sampling at 12 locations (refer to **Table 4** below and **Figure F5** in **Appendix A** for specific locations)
- collection of field duplicate samples at a rate of 1 in 10 primary samples
- analysis of samples for PFAS suite at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of this factual monitoring event report.

Note: due to privacy considerations, selected monitoring locations are unable to be shown on the figures in **Appendix A**.

**Table 1** Groundwater Sampling Locations

Area	Description	Sampling Location	Total
On-Site	<b>Former &amp; Current Fire Station</b> (Facility 165)	MW196, MW198, MW200, MW201S, MW201D, MW202S, MW202D	7
	<b>Disused Fire Training Pit</b> (Facility 479)	MW166, MW167, MW168, MW169S, MW169D	5
	<b>Former DEMS Landfill</b> (Facility 394)	MW171S, MW171D, MW172, MW282S, MW240D, MW281S	6
	<b>Ordnance Loading Area</b>	MW244S, MW244D	2
	<b>Lake Cochran</b>	MW108S, MW108D, MW109D, MW175D, MW179S, MW179D, MW466, MW468	8
	<b>Northeast Landfill</b>	MW156D, MW209S, MW209D, MW433, MW406	5
	<b>Trade Waste Treatment Plant</b> (Facility 480)	MW106S, MW106D, MW208, MW212, MW155*, MW210S, MW210D	7
	<b>HWC Pump Station 7</b>	MW134I, MW134D, MW814* (Eastern most bore in PS7), MW245S, MW245D, MW317S and MW317D	7

Area	Description	Sampling Location	Total
East of Site	<b>Pump Station 9</b> Eastern flank of PFAS plume	MW130S*, MW130D, MW132S, MW132D, MW160, MW159S, MW159D, MW318S, MW318D, MW826*, MW829, MW842, MW844	13
	<b>Moors Drain</b> Eastern flank of PFAS plume	MW120*, MW121, MW122, MW161S, MW161D, MW162S, MW162D, MW247S, MW247D, <b>POT046</b>	10
West of Site	<b>Existing Monitoring Wells</b> West of PFAS plume	MW103S*, MW103D*, MW107S*, MW107D*, MW241S, MW241D, MW280S, MW315S, MW315D	9
Southern Area	<b>Existing Monitoring Wells &amp; Bores</b> Southern portion of PFAS plume	MW104S, MW104D, MW146S*, MW146D_A, MW177*, MW184S, MW184D, MW188S, MW188D*, MW226S*, MW226D*, <b>MW271S, MW271D, MW278S*, MW278D*</b> ,	15
Cabbage Tree Road Area	<b>Existing Monitoring Wells &amp; Bores</b> Southern portion of PFAS plume	MW124, MW125S*, MW125D*, MW126S, MW126D, MW137, <b>MW139</b> , MW140, MW178, MW229S*, MW229D*, <b>MW230S, MW236S, MW236D, MW238D, MW238S, POT085, POT107</b>	18
Lavis Lane Area	<b>Monitoring Wells</b> Southern edge of PFAS plume	MW128S, MW128D, MW163, MW195, MW279S and MW316D	6
Salt Ash Area	<b>Existing Monitoring Wells &amp; Bores</b> Eastern portion of PFAS plume	MW118, MW123, MW252S*, MW255S, MW255D, MW256S, MW256D, MW257S, MW257D, MW258S, MW258D, MW260S, MW260D, MW263D, MW263S, <b>POT087, POT089, POT144</b>	18
Fullerton Cove Area	<b>Existing Monitoring Wells &amp; Bores</b> Southern edge of PFAS plume	<b>MW147D, MW147S, MW231D, MW231S, POT382, MW232S, MW232D, MW235S*, MW235D*, MW266S*, MW266D*, MW267S*, MW267D*, MW270D, MW270S, POT236, POT257</b>	17
Off-site	<b>Background</b>	MW158S, MW158D, MW264S, MW264D	4
<b>Total</b>			<b>157</b>
* Location not sampled <b>Bold</b> text denotes private property location			

Table 2 Surface Water Monitoring Locations

Area	Sampling Location
Lake Cochran & On-Site Drains	SW047, SW048, SW108, SW110
Dawsons Drain	SW055, SW059, SW060
Fourteen Foot Drain	SW062, <b>SW072*</b>
Ten Foot Drain	SW081, <b>SW082*</b>
Moors Drain	SW001, SW005, SW006, SW007, SW009, SW011*, SW014
Fullerton Cove Ring Drain	<b>SW259</b>
Tilligerry Creek	<b>SW019, SW023, SW024, SW079</b>

Area	Sampling Location
Total	23
* Location not sampled <b>Bold</b> text denotes private property location	

Table 3 Sediment Sampling Locations

Area	Sampling Location
Lake Cochran & On-Site Drains	SD108, SD110, SD047, SD048
Dawsons Drain	SD055, SD059, SD060
Fourteen Foot Drain	SD062, <b>SD072*</b>
Ten Foot Drain	SD081, <b>SD082*</b>
Moors Drain	SD001, SD005, SD006, SD007, SD009, SD011*, SD014
Fullerton Cove Ring Drain	<b>SD259</b>
Fullerton Cove (tidal gate outlet)	<b>SD254, SD255, SD326</b>
Tilligerry Creek	<b>SD019</b> , SD023, SD024, SD079
Total	26
* Location not sampled <b>Bold</b> text denotes private property location	

Table 4 Soil Sampling Locations

Area	Sampling Location	Number of locations
Flood Areas	2 per flood area	SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112

Note: Soil samples were collected from the designated flood areas outlined in the OMP (AECOM, 2019)

### 3.0 Deviations from the SAQP

The May 2022 annual sampling event was completed in general accordance with the SAQP (AECOM, 2022) with the exception of the deviations outlined in **Table 5** below.

**Table 5** Deviations from SAQP (AECOM, 2022)

SAQP	May 2022 annual Sampling Event
<p>157 groundwater locations are identified to be sampled as part of the annual sampling event</p>	<p>During the May 2022 sampling event, 27 of the 157 scheduled groundwater locations were unable to be gauged and/or sampled.</p> <p>Monitoring wells MW103S, MW103D, MW107S and MW107D, located to the west of the Site, were in flooded areas and could not be sampled. Given that nearby monitoring wells MW280S, MW135S/MW135D and MW241S/MW241D were able to be gauged and sampled, the lack of sampling data from these locations is not considered to present a significant data gap.</p> <p>Monitoring well MW120, located to the east of the Site, was covered by a stockpile of road base and could not be accessed. The lack of sampling data from MW120 presents a potential data gap in monitoring the eastern flank of PFAS plume, however nearby wells MW121 and MW279S, which were able to be sampled, provide coverage to the east and south of MW120.</p> <p>Monitoring wells MW125S, MW125D, MW146S, MW188D, MW229S, MW229D, MW278S and MW278D located to the south of the Site, were either buried beneath stockpiles of soil associated with the Cabbage Tree Road upgrade works (MW125S, MW125D and MW188D), could not be located or accessed in areas of overgrown vegetation (MW146S, MW229S and MW229D), or could not be accessed due to flooding in the area (MW278S and MW278D). The lack of sampling data from MW146S, MW188D, MW278S and MW278D is not considered to present a significant data gap as nearby monitoring wells MW146AD, MW147S, MW147D, MW188S, MW126S/MW126D and MW230S were able to be sampled and provide sufficient coverage of this area. The lack of sampling data from MW125S, MW125D, MW229S and MW229 presents a potential data gap in monitoring the southwestern extent of the western plume.</p> <p>Monitoring wells MW177, MW226S and MW226D, located to the south of the Site, could not be located or accessed in areas of overgrown vegetation and not sampled. Given that nearby monitoring wells MW184S/MW184D, MW104S/MW104D, MW731S and MW188S were able to be sampled, the lack of sampling data from these locations were not considered to be a significant data gap.</p> <p>Monitoring well MW130 was located in a flooded area and could not be sampled. Given that paired monitoring well MW130D and nearby monitoring wells MW159S and MW159D were able to be sampled, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>Monitoring well MW155 in the northern portion of the Site was covered by pipes associated with construction works and could not be sampled. Given that nearby monitoring wells MW406, MW245S and MW245D were able to be sampled, the lack of sampling data from this location is not considered to be a significant data gap.</p>

SAQP	May 2022 annual Sampling Event
	<p>Access to sample monitoring well locations MW235D, MW235S, MW267D and MW267S, located on private properties to the south of the Site were declined by the property owner and therefore were not sampled. Given that nearby monitoring wells MW233S/MW233D, MW268S and down hydraulic gradient wells MW270S/S270D were able to be sampled, the lack of sampling data from these locations were not considered to be a significant data gap.</p> <p>Monitoring wells MW266S and MW266D, located to the south of the Site, were located in a flooded area and could not be sampled. Given that monitoring wells MW233S/MW233D, MW147S/MW147D and MW270S/MW270D were able to be sampled, the lack of sampling data from these locations is not considered to be a significant data gap.</p> <p>Monitoring well MW252S, located to the east of the Site, was unable to be accessed due to localised flooding. Given that nearby monitoring wells and residential bores MW123, POT087 and POT089 were able to be accessed and sampled, the lack of sampling data at this location is not considered to present a significant data gap.</p> <p>Monitoring well MW814, located in the northern portion of the Site, was within a flooded area and could not be sampled. Given that nearby monitoring wells MW317S/MW317D and MW134I/MW134D were able to be sampled, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>Monitoring well MW826, located to the east of the Site, could not be located and was therefore not be sampled. Given that nearby monitoring wells MW132S/MW132D, MW160 and MW829 were able to be sampled, the lack of sampling data from this location is not considered to be a significant data gap.</p>
<p>23 surface water locations are identified to be sampled as part of the annual sampling event</p>	<p>During the May 2022 sampling event, three of the 23 scheduled surface water locations were unable to be sampled.</p> <p>Surface water sample location SW011 was located in a flooded area and could not be sampled. Given that surface water samples were able to be collected downstream of this location at SW014 and SW005, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>No surface water samples were collected at location SW072 as the private property owner declined access to their property. Given that a surface water sample was able to be collected upstream of this location at SW062, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>No surface water sample was collected at location SW082 as the private property owner declined access to their property. Given that surface water samples were able to be collected upstream of this location within Ten Foot Drain at SW081, the lack of sampling data from this location is not considered to be a significant data gap.</p>
<p>26 sediment locations are identified to be sampled as part of the annual sampling event</p>	<p>During the May 2022 sampling event, three of the 26 scheduled sediment locations were unable to be sampled.</p> <p>Sediment sample location SD011 was located in a flooded area and could not be sampled. Given that sediment samples were able to be</p>

SAQP	May 2022 annual Sampling Event
	<p>collected downstream of this location at SD014 and SD005, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>No surface water samples were collected at location SD072 as the private property owner declined access to their property. Given that a sediment sample was able to be collected upstream of this location at SD062, the lack of sampling data from this location is not considered to be a significant data gap.</p> <p>No sediment sample was collected at location SD082 as the private property owner declined access to their property. Given that surface water samples were able to be collected upstream of this location within Ten Foot Drain at SD081, the lack of sampling data from this location is not considered to be a significant data gap.</p>
<p>Groundwater samples will be collected from monitoring wells using no-purge methodology with HydraSleeves™</p>	<p>Due to the absence or failed deployment of the HydraSleeve™ in monitoring wells MW108S, MW109D, MW126, MW171S, MW209S, MW245S, MW280S and MW829, samples were collected using dedicated disposable bailers. The change in sampling methodology is not considered to impact the reliability of the data given that the concentrations of PFAS reported during this round were within the same order of magnitude of previous results.</p> <p>Due to the narrow PVC of monitoring wells MW842 and MW844, no HydraSleeve™ was able to be installed, and a grab sample was collected using a peristaltic pump with dedicated sample tubing. Note that this sampling methodology has been previously used at these locations under the OMP scope of works, and that the SAQP will need to be updated to reflect the need for a specific sampling methodology for these two locations.</p>

## 4.0 Methodology

### 4.1 Sampling Methodology

The methodology used for the May 2022 annual sampling event was in accordance with the SAQP (AECOM, 2022) and is summarised in **Table 6** below.

**Table 6 Sampling Methodology**

Item	Details
Groundwater gauging	<p>The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.</p> <p>In addition, a targeted gauging round was completed of 33 selected monitoring wells to generate data for the groundwater elevation contours and assess groundwater flow direction. The targeted gauging round was completed on 1 June 2022 and 2 June 2022.</p>
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for groundwater and surface water samples.</p> <p>Field parameters were collected using a calibrated water quality meter (WQM). The equipment supplier and field calibration records are provided in <b>Appendix C</b>.</p>
Sampling methodology	<p><b>Groundwater Monitoring Wells</b></p> <p>The majority of groundwater samples were collected from each monitoring well using HydraSleeves™, a no-purge sampling methodology.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round, based on a review of the well construction log. For this event, all the HydraSleeves™ were installed during previous sampling rounds in May 2021 and November 2021.</p> <p>Once sampling was completed, new HydraSleeves™ were deployed in each of the monitoring wells, within the screened interval depth in preparation for the next sampling round.</p> <p>At locations where the HydraSleeves™ failed to deploy, or had been removed prior to the sampling event, AECOM collected groundwater samples using dedicated, disposable bailers. At locations MW842 and MW844, groundwater samples were collected using a peristaltic pump with dedicate sample tubing, given that the diameter of the well casing was too small to accommodate a HydraSleeve™ or disposable bailer.</p> <p><b>Residential Bores</b></p> <p>Bore water samples were collected by placing a laboratory provided sample bottle beneath the tap outlet to collect the “first flush” of water.</p> <p><b>Surface Water</b></p> <p>Surface water samples were collected from immediately below the water surface (approximately 10 centimetres [cm] below the surface water level, where depth permitted) to minimise collection of sediment, surface film or floating materials in the samples.</p> <p>At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p> <p><b>Sediment</b></p>



Item	Details
	<p>Sediment samples representative of potentially deposited sediments were collected from within the water body, using a hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). A new laboratory supplied container was used at each location for collection of samples.</p> <p><b>Soil</b></p> <p>Soil samples were collected using a hand trowel to a maximum depth of 0.1 mbgl. A new laboratory supplied container was used at each location for collection of samples.</p>
QA/QC Samples	<p>A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained.</p> <p>To facilitate the QA/QC program the following sample types were obtained during the sampling program:</p> <ul style="list-style-type: none"> <li>• <i>Intra-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Inter-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Rinsate blanks</i> collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory limit of reporting (LOR).</li> </ul> <p>For this May 2022 annual sampling event, the QA/QC samples included:</p> <ul style="list-style-type: none"> <li>• 22 x intra-laboratory duplicates (16 groundwater, 3 surface water, 2 sediment and 1 soil), which met the target frequency</li> <li>• 21 x inter-laboratory duplicates, (16 groundwater, 2 surface water, 2 sediment and 1 soil) which met the target frequency</li> <li>• 17 x rinsate blanks, which met the target frequency</li> </ul> <p>The data validation assessment is presented in <b>Appendix D</b>.</p>
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for PFAS suite at the standard limit of reporting (LOR).</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>A summary of the laboratory results is presented in <b>Section 5.3</b> and the laboratory certificates are presented in <b>Appendix E</b>.</p>

## 4.2 Adopted Screening Criteria

Adopted screening criteria references the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the data set include the following:

- Heads of Environmental Protection Agencies (HEPA), 2020. PFAS National Environmental Management Plan (NEMP) Version 2.0. January 2020 (HEPA 2020).



- Department of Health (DoH), 2017. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 (FSANZ 2017).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019).
- National Environment Protection Council (NEPC), 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (NEPC 2013).

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in

**Table 7** and **Table 8** below.

**Table 7 Summary of Adopted Screening Criteria: Water**

Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>			
Drinking water – groundwater and surface water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP (2020) are from the DoH (2017), which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the Tolerable Daily Intake (TDI) for PFOS and PFOA from Food Standards Australia New Zealand (FSANZ) (2017) and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) of the Australian Drinking Water Guidelines (ADWG) (2022) to determine drinking water values.
	PFOA	0.56 µg/L	For PFHxS, DoH (2017) noted that ' <i>FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS.</i> '  <i>All surface water and groundwater results were compared to these criteria.</i>
Recreational use – surface water	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted by the HEPA NEMP 2.0 (2020).  <i>All surface water results were compared to these criteria.</i>
	PFOA	10 µg/L	
<b>Ecological Receptors</b>			
Freshwater	PFOS	0.00023 µg/L	The values are from the PFAS NEMP (2020) which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.  The 99% species protection level (for freshwater and interim marine) has been applied for high value

	PFOA	19 µg/	<p>conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.</p> <p><i>All groundwater and surface water results were compared to these criteria.</i></p>
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Table 8 Summary of Adopted Screening Criteria: Soil

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Receptors</b>				
Soil	Public Open Space	PFOS + PFHxS	1 mg/kg	<p>The values presented in the PFAS NEMP (2020) are based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.</p> <p>The assumptions utilised in the derivation of the criteria in terms of exposure are adopted from the NEPM (2013) Health Investigation Level D. The values make several assumptions including 8 hrs spent indoors and 1 hr spent outdoors at a site such as a shop, office, factory or industrial site.</p> <p>The PFAS NEMP (2020) notes these soil guidance values should only be used to assess potential human exposure through direct soil contact, with simultaneous investigation of other factors including leaching, off-Site transport, bioaccumulation and secondary exposure. Further, the degree of conservatism in the soil criteria means that exceeding these values does not necessarily indicate an unacceptable risk to human health, provided other exposure pathways are controlled.</p> <p><i>The off-site soil results were compared to the most relevant exposure scenario (Public Open Space for soil samples collected from flood areas).</i></p>
		PFOA	10 mg/kg	
<b>Ecological Receptors</b>				
Soil	Interim soil ecological - indirect exposure (All land uses)	PFOS	0.01 mg/kg	<p>The values are presented in the NEMP (2020) which published interim guidance values for ecological receptors, for use in Site investigations. The values were adopted from Canadian Federal Environmental Quality Guidelines (2017) for Commercial and Industrial use (coarse soil). The values are assumed to protect against potential impacts on freshwater life from PFOS originating from soil that may enter surface water and groundwater.</p> <p>The values are considered for interim use noting further research is required to review and amend (if necessary) these values for Australian conditions.</p> <p><i>All soil results collected from off-site open space areas (soil samples collected from flood areas) were compared against the direct and indirect screening criteria.</i></p>
		PFOA	-	
	Interim soil ecological – direct exposure (All land uses)	PFOS	1 mg/kg	
		PFOA	10 mg/kg	

### 4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022). Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

Following the reporting of PFAS concentrations which were outside historical ranges at a number of locations (MW128D, MW139, MW146AD, MW230S, MW245D, MW842, MW844, SS107), the primary laboratory was requested to repeat the analysis to confirm the reported concentrations. Further details are provided in **Appendix D**.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) requirements.

## 5.0 Field Observations and Results

### 5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the May 2022 annual sampling event completed between 16 May 2022 and 02 June 2022 are summarised in **Table 9** below.

**Table 9** General Observations

Items	Observations
Weather Conditions	<p>During the sampling event, the weather was observed to be variable, with maximum daily temperatures between 14.4°C (20 May) and 23.4°C (16 May).</p> <p>A cumulative 72 mm of rainfall was recorded at Williamtown (Williamtown RAAF, 61078) (Bureau of Meteorology, 2022) during the sampling event, with the majority of the rainfall recorded between 21 and 25 May 2022.</p> <p>It is noted that above average rainfall had been experienced consistently at Williamtown in the four months preceding the monitoring event in May 2022 (with more than three times the monthly average recorded in March 2022).</p> <p>As a result, significant standing water was observed in low lying areas at the Site and surrounds which impacted access to a number of sampling locations.</p>
Estate Management Works, Training Activities and/or Construction Works.	<p>During the May 2022 sampling event, construction activities in the vicinity of MW155 in the northern portion of the Site prevented access to this location.</p> <p>Several monitoring wells (MW125S, MW125D, and MW188D) located along Cabbage Tree Road to the south of the Site could not be accessed or sampled due to road widening construction activities being undertaken in this area.</p>

### 5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the May 2022 annual sampling event are summarised in **Table 10**, below.

**Table 10** Field Observations and Measurements

Item	Description
Access and Sample Collection	All sample locations were accessible or were able to be sampled with the exception of those identified in <b>Table 5</b> .

Item	Description
Monitoring Well Network Condition	<p>All wells sampled were observed to be in good condition with the exception of the following:</p> <ul style="list-style-type: none"> <li>• MW156D, MW188S, MW198, MW208 and MW238S: these monitoring wells were observed to have damaged or missing gatic lids. AECOM will attempt to repair and/or replace these gatics ahead of the next scheduled sampling event</li> <li>• MW230S, MW258D and MW263D: these monitoring wells were observed to have water within the gatic covers either above or below the top of PVC casing</li> <li>• MW120, MW125D, MW125S: condition unable to be assessed as the wells was buried beneath stockpiled material</li> <li>• MW256S and MW260D: both wells had missing gatic cover bolts which were replaced by the field team during the sampling event.</li> </ul>
Water Contamination Observations	<p>No visible signs of contamination in groundwater or surface water were observed at the locations sampled.</p>
Depth to Groundwater and Flow Direction	<p>Depth to groundwater ranged from 0.000 (MW130D, MW158S/D, MW195, MW230S, MW231D, MW264D, MW280S) and 2.460 (MW210S/D) metres below top of casing (mbTOC). Groundwater elevation ranged between -0.051 (MW128S) and 9.347 (MW264D) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in <b>Table T1</b> in <b>Appendix B</b>.</p> <p>The inferred groundwater flow direction is to the south and south east towards Tilligerry Creek and Fourteen Foot Drain, and to the south of Tilligerry Creek, Fourteen Foot Drain and Ten Foot Drain, groundwater is inferred to be flowing to the north-northeast (refer to <b>Figure F6-1</b> and <b>F6-2</b> in <b>Appendix A</b>) which was generally consistent with previous flow directions.</p>

Item	Description
Geochemical Parameters	<p>Groundwater and surface water geochemical parameters were measured during the collection of water samples. The readings are presented in <b>Table T2</b> and <b>Table T3</b> in <b>Appendix B</b> and are summarised below:</p> <p><b>Groundwater Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 0.04 mg/L (MW281S) to 10.7 mg/L (MW104S) indicating poor to well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 29.7 µS/cm (MW247S) to 35,940 µS/cm (MW147D) indicating fresh to saline conditions.</li> <li>• pH ranged from 3.59 (MW282S) to 7.55 (POT382) indicating moderately acidic to neutral conditions.</li> <li>• Redox ranged from -224.6 mV (MW231D) to 521 mV (POT085) indicating oxidising to reducing conditions.</li> </ul> <p><b>Surface Water Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 2.3 mg/L (MW245D, SW047) to 8.21 mg/L (SW048) indicating generally well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 23.4 µS/cm (SW048) to 1,107 µS/cm (SW079) indicating fresh to saline conditions.</li> <li>• pH ranged from 5.15 (POT046, SW048) to 7.15 (SW110) indicating slightly acidic to neutral conditions.</li> <li>• Redox ranged from -6.9 mV (SW055) to 153.8 mV (SW108) indicating oxidising to reducing conditions.</li> </ul>
Soil and Sediment Observations	<p>Soil and sediment sampled and logged during this monitoring event comprised sand, silt and clay materials with minor inclusions of gravels and trace shell fragments, and varying amounts of organic material (roots, leaves, grass).</p> <p>No anthropogenic inclusions or staining was observed. Organic odour was noted in samples collected from seven locations.</p> <p>Refer to in <b>Table T4</b> in <b>Appendix B</b> for a summary of soil and sediment classifications and observations.</p>

## 5.3 Summary of Analytical Results

### 5.3.1 Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary, 130 primary groundwater samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 83 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted human health screening criteria in 55 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 69 primary samples.

Deviations from the historical dataset are reported in **Table 11** and graphically on **Figure F7** in **Appendix A**.

Table 11 Deviations from Historical Dataset: Groundwater

Deviation Type	Groundwater sampling location	Sum of PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		May 2022	Previous maximum	May 2022	Previous maximum	May 2022	Previous maximum
First time detections of PFOS+PFHxS PFOS and/or PFOA in groundwater	MW128D	0.01	<LOR	There was no first-time detection in the dataset.		0.01	<LOR
	MW146AD	0.28	<LOR	There was no first-time detection in the dataset.		0.27	<LOR
	MW147S	There were no first-time detections in the dataset.		0.01	<LOR	There were no first-time detections in the dataset.	
	MW230S	0.01	<LOR	There was no first-time detection in the dataset.		There was no first-time detection in the dataset.	
	MW245D	0.01	<LOR	There was no first-time detection in the dataset.		There was no first-time detection in the dataset.	
	MW264S	0.02	<LOR	There was no first-time detection in the dataset.		0.02	<LOR
	MW270S	0.03	<LOR	There was no first-time detection in the dataset.		0.01	<LOR
	MW842	0.02	<LOR	There was no first-time detection in the dataset.		0.02	<LOR
	POT089	There were no first-time detections in the dataset.		0.01	<LOR	There were no first-time detections in the dataset.	
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines in groundwater	MW146AD	0.28	<LOR	There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
	MW247D	0.08	0.06	There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in groundwater	MW128D	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.01	<LOR
	MW146AD	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.27	<LOR
	MW264S	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological		0.02	<LOR



Deviation Type	Groundwater sampling location	Sum of PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		May 2022	Previous maximum	May 2022	Previous maximum	May 2022	Previous maximum
				Screening Criteria in the dataset (99%).			
	MW270S	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.01	<LOR
	MW842	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.02	<LOR
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening criteria						

### 5.3.2 Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, 20 primary surface water samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 19 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted drinking water human health screening criteria in 19 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted recreational use human health screening criteria in nine primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 19 primary samples.

There were no first-time detections, or new exceedances of the adopted human health or ecological screening criteria for PFOS+PFHxS, PFOS and/or PFOA, in the surface water samples analysed.

### 5.3.3 Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T7** in **Appendix B**. In summary, 23 primary sediment samples were analysed for PFAS compounds, with concentrations of PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 23 primary samples.

There were no first-time detections for PFOS+PFHxS, PFOS and/or PFOA, in the sediment samples analysed.

### 5.3.4 Soil Analytical Results

The PFAS soil analytical results from this sampling event are presented in **Table T8** in **Appendix B**. In summary, 12 primary soil samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 12 primary samples
- PFOS+PFHxS and/or PFOA did not exceed the adopted human health screening criteria in any primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 3 primary samples.

Deviations from the historical dataset are reported in **Table 12** and graphically on **Figure F8** in **Appendix A**.

**Table 12** Deviations from Historical Dataset: Soil

Deviation Type	Soil sampling location	Sum of PFOS+PFHxS (mg/kg)		PFOA (mg/kg)		PFOS (mg/kg)	
		May 2022	Previous maximum	May 2022	Previous maximum	May 2022	Previous maximum
First time detections of PFOS+PFHxS PFOS and/or PFOA in soil	-	There was no first-time detection in the dataset.		There was no first-time detection in the dataset.		There was no first-time detection in the dataset.	
New exceedance of the NEMP (HEPA, 2020) Human Health Screening Criteria in soil	-	There were no first-time exceedances of the NEMP Human Health Screening Criteria in the dataset.		There were no first-time exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) Ecological Screening Criteria in soil	SS107	There are no applicable NEMP Ecological Screening Criteria.		There were no first-time exceedances of the NEMP Ecological Screening Criteria in the dataset.		0.0299	0.0078
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening criteria						

## 5.4 Historical Sampling Data

Historical groundwater, surface water, sediment and soil sampling data are presented in **Tables T9, T10, T11** and **T12** (respectively) in **Appendix B**.

## 6.0 Summary and Next Sampling Events

### 6.1 Summary of Monitoring Event

The May 2022 annual sampling event was completed between 16 May 2022 and 02 June 2022. The findings and the recommended actions are summarised in **Table 13** below.

**Table 13 Summary of Sampling Event**

Item	Comment	Recommended Action
Access to sampling locations	<p>The following were accessed and able to be sampled:</p> <ul style="list-style-type: none"> <li>• 130 groundwater locations</li> <li>• 20 surface water locations</li> <li>• 23 sediment locations</li> <li>• 12 soil locations</li> </ul>	Nil.
Location unable to be located, inaccessible or dry	<p>Groundwater samples from six monitoring wells (MW103S, MW103D, MW107S, MW107D, MW130 and SW252S) and one co-located surface water / sediment location (SW011 / SD011) were not collected as the location or access to the locations was flooded.</p>	<p>AECOM will continue to monitor these sampling locations during the next scheduled sampling event (November 2022).</p>
	<p>Groundwater samples from eight monitoring wells (MW120, MW177, MW226S, MW226D, MW266S, MW266D, MW814 and MW826) were not collected as they could not be accessed and/or located.</p>	<p>AECOM recommends the removal of these eight locations from the OMP scope of works as they have not been able to be sampled over successive sampling events and, in some cases, since 2018-2019. These locations are either lost, destroyed or unable to be accessed in the long term.</p> <p>The existing monitoring well network provides adequate coverage for these wells.</p> <p>AECOM recommends replacing MW120 with nearby existing monitoring wells MW150S and MW150D, if they are still operational.</p>
	<p>Groundwater samples from nine monitoring locations (MW125S, MW125D, MW146S, MW155, MW188D, MW229S, MW229D, MW278S and MW278D) to the south of the Site could not be located or sampled due to overgrown vegetation, flooded access and/or construction activities.</p>	<p>AECOM will continue to monitor these sampling locations during the next scheduled sampling event.</p>

Item	Comment	Recommended Action
	Groundwater samples from four groundwater monitoring locations (MW235D, MW235S, MW267D and MW267S) and two co-located surface water / sediment locations (SW072 / SD072 and SW082 / SD082) located on private properties could not be sampled as the property owners did not provide consent to access the properties.	<p>Two property owners have permanently opted out for the OMP program, as such AECOM will no longer have access to MW235D, MW235S, MW267D, MW267S, SW072/SD072 and SW082/SD082.</p> <p>These monitoring wells are outside of the current inferred plume footprint and the current well network provides sufficient coverage for the southerly extent.</p> <p>AECOM proposes to replace SW072/SD072 with a new co-located surface water / sediment location in the vicinity of MW147S/MW147D, downstream of the original location.</p>
Monitoring well network condition	All monitoring wells that were able to be accessed were noted to be in good condition, with the exception of some with damaged or missing gatic lids and some with water in gatics, with the water either above or below TOC.	AECOM will attempt to replace gatic lids were damaged or missing during the next scheduled sampling event.
Analytical Results	130 groundwater primary samples, 20 surface water primary samples, 23 sediment primary samples and 12 soil primary samples were analysed.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
First time detections of PFOS+PFHxS, PFOS and/or PFOA	<p>10 monitoring wells / bores out of the 130 sampled (MW128D, MW146AD, MW147S, MW230S, MW245D, MW264S, MW264S, MW270S, MW842 and POT089) reported first time detections of PFOS+PFHxS and/or PFOA.</p> <p>No surface water, sediment or soil locations sampled reported first time detections of PFOS+PFHxS, PFOA and/or PFOS.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

Item	Comment	Recommended Action
New exceedance of adopted human health screening criteria	<p>2 monitoring wells out of the 130 sampled (MW146AD, MW247D) reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>No surface water locations reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>No sediment locations reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted ecological screening criteria	<p>5 monitoring wells out of the 130 sampled (MW128D, MW146AD, MW264S, MW270S, MW842) reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>No surface water locations reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>1 soil location out of the 12 sampled (SS107) reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

## 6.2 Upcoming Sampling Events

The next OMP sampling event is scheduled for November 2022.

## 6.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled to be delivered in Q3 2022.

## 7.0 References

- AECOM, 2019. *PFAS Ongoing Monitoring Plan – May 2019, RAAF Base Williamtown*. 27 May 2019.
- AECOM, 2022a. *Sampling and Analysis Quality Plan, RAAF Base Williamtown*. Revision G, 13 May 2022.
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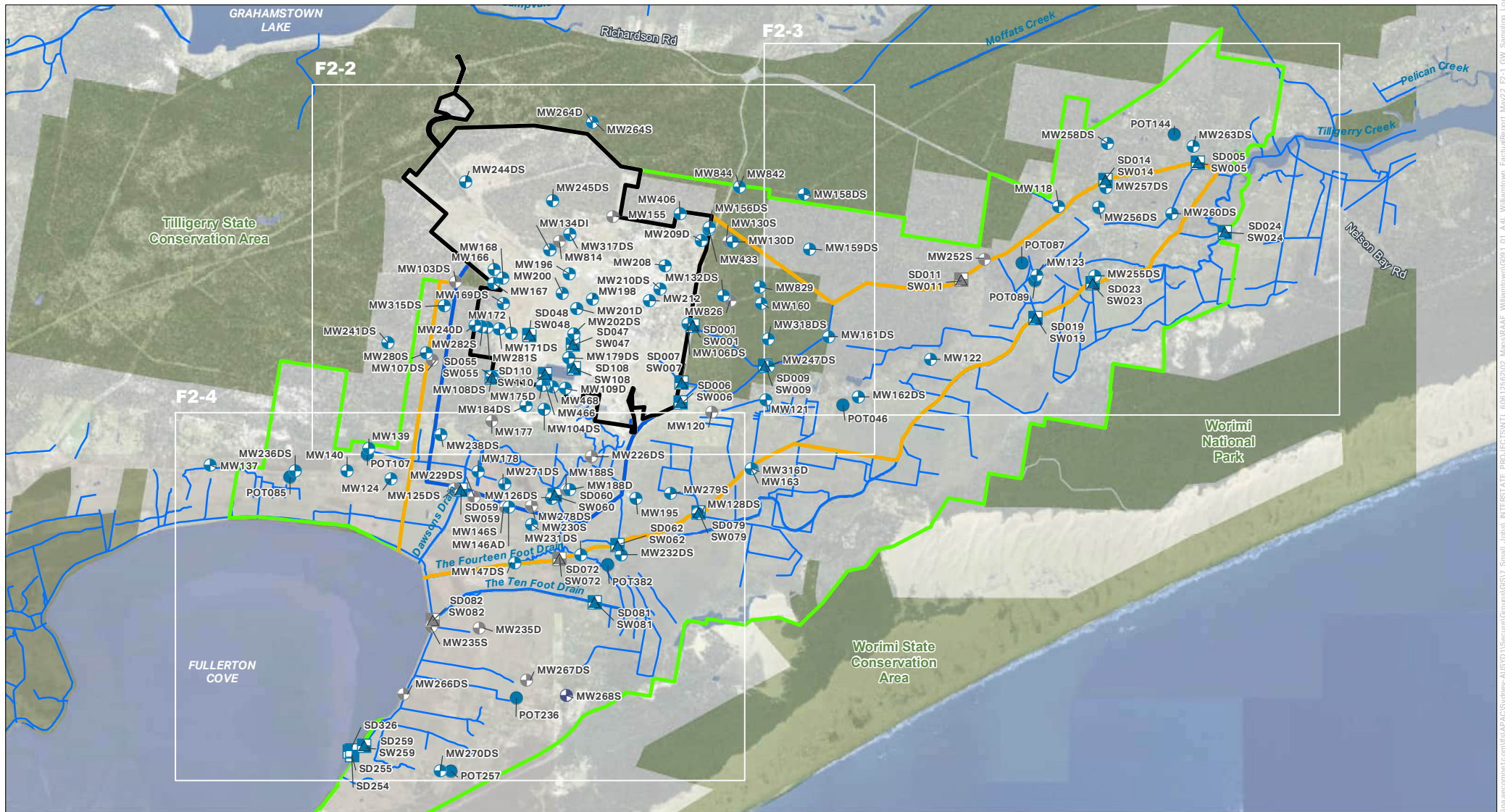
# Appendix A

Figures

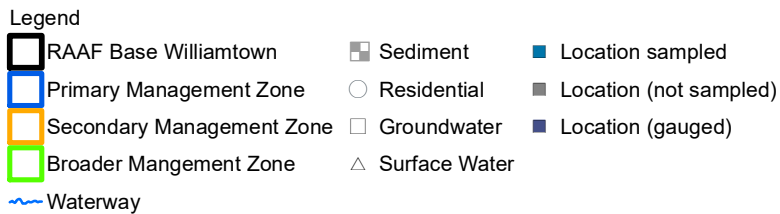








**FIGURE F2-1: GROUNDWATER SAMPLING LOCATIONS OVERVIEW**



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
**Sampling Event Factual Report – May 2022**  
**RAAF Base Williamtown (0908)**  
 PROJECT NUMBER:  
**60612562**  
 CLIENT:  
**Department of Defence**

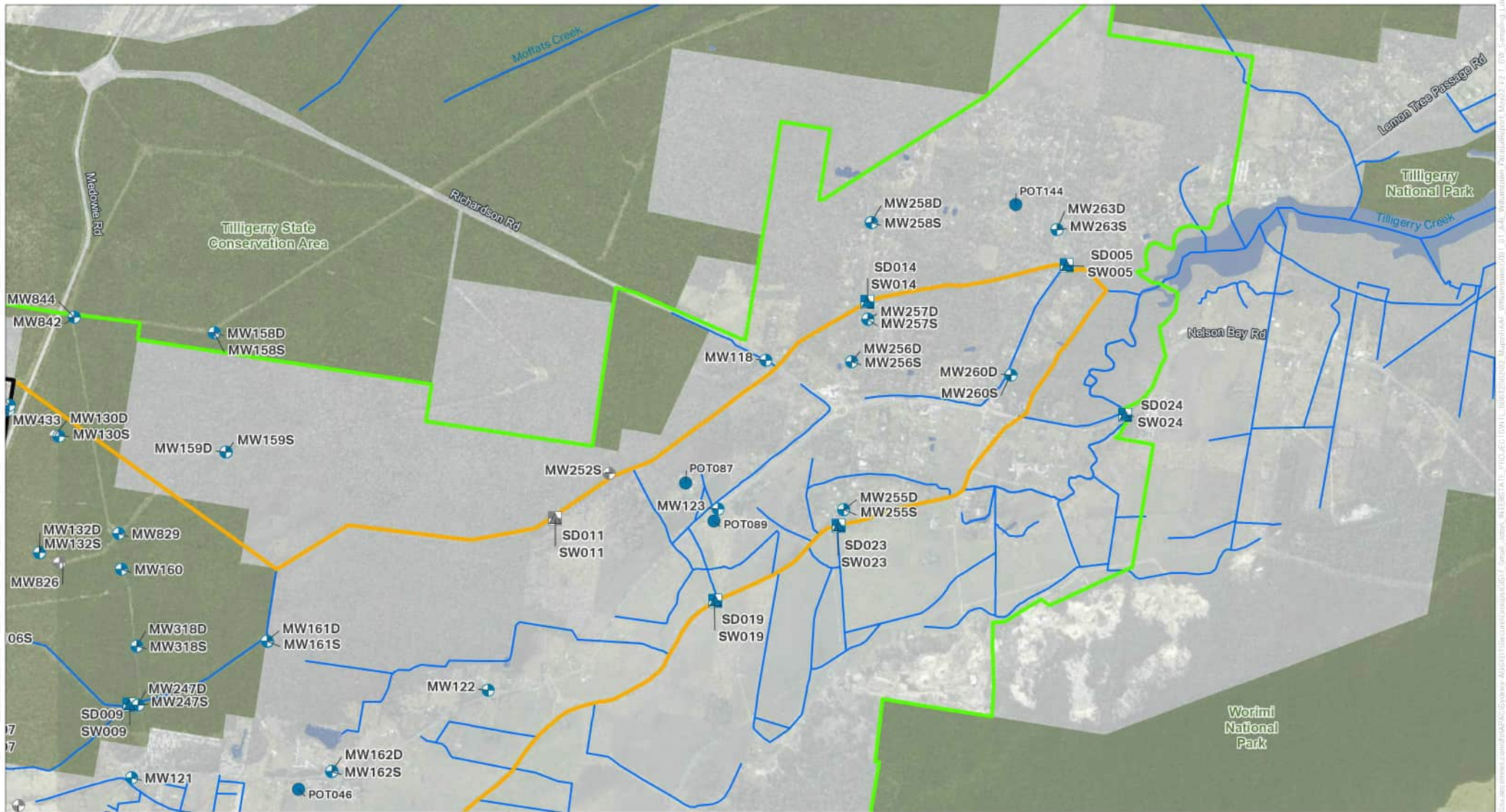
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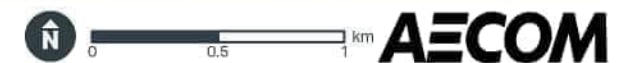








**FIGURE F2-3: GROUNDWATER SAMPLING LOCATIONS - EAST**



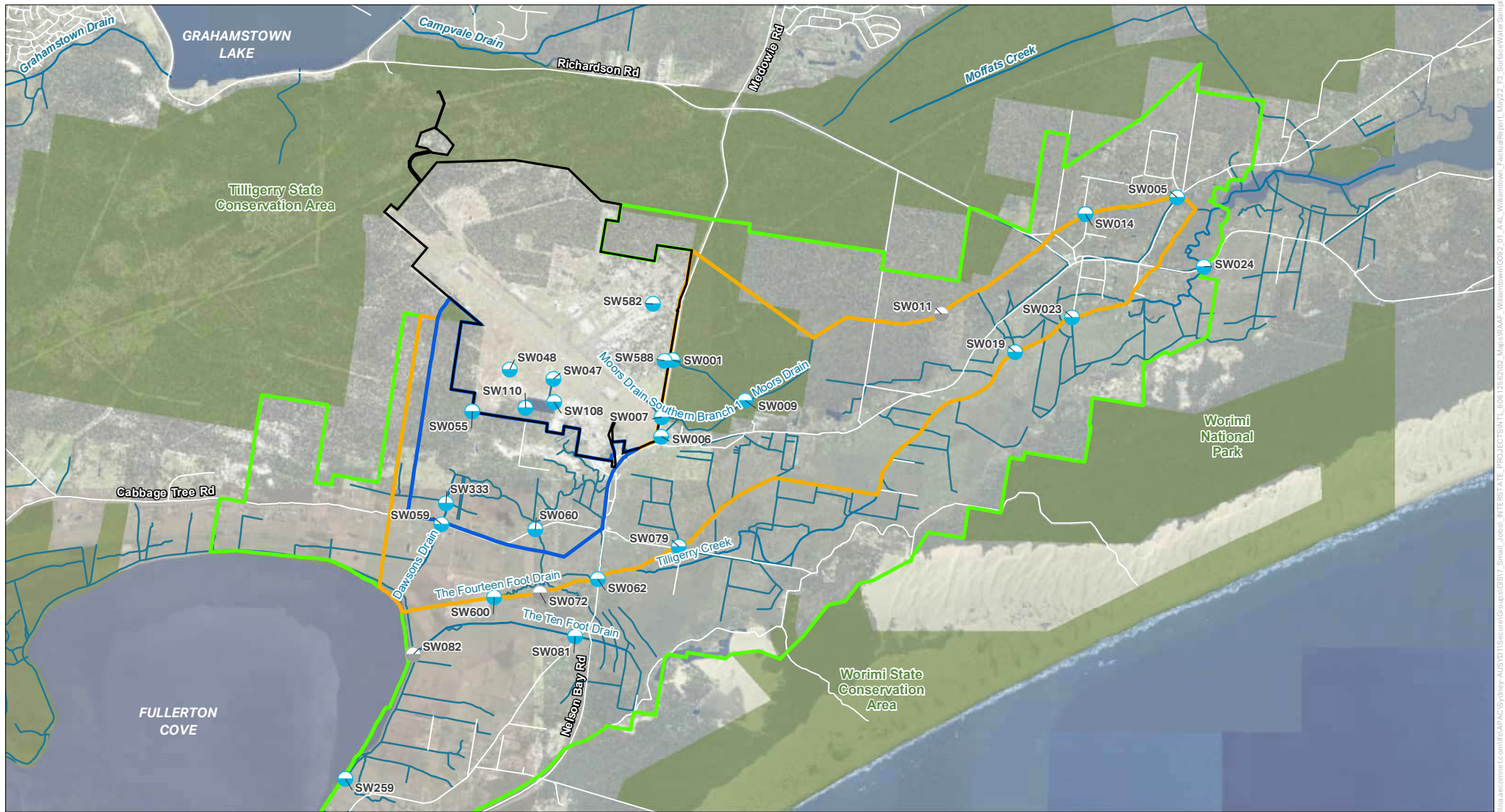
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 REPORT NAME:  
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 RAAF Base Williamtown (0908)  
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**FIGURE F3: SURFACE WATER SAMPLING LOCATIONS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- ~ Waterway
- Surface Water Location (sampled)
- Surface Water Location (not sampled)



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
**Sampling Event Factual Report – May 2022**  
**RAAF Base Williamtown (0908)**  
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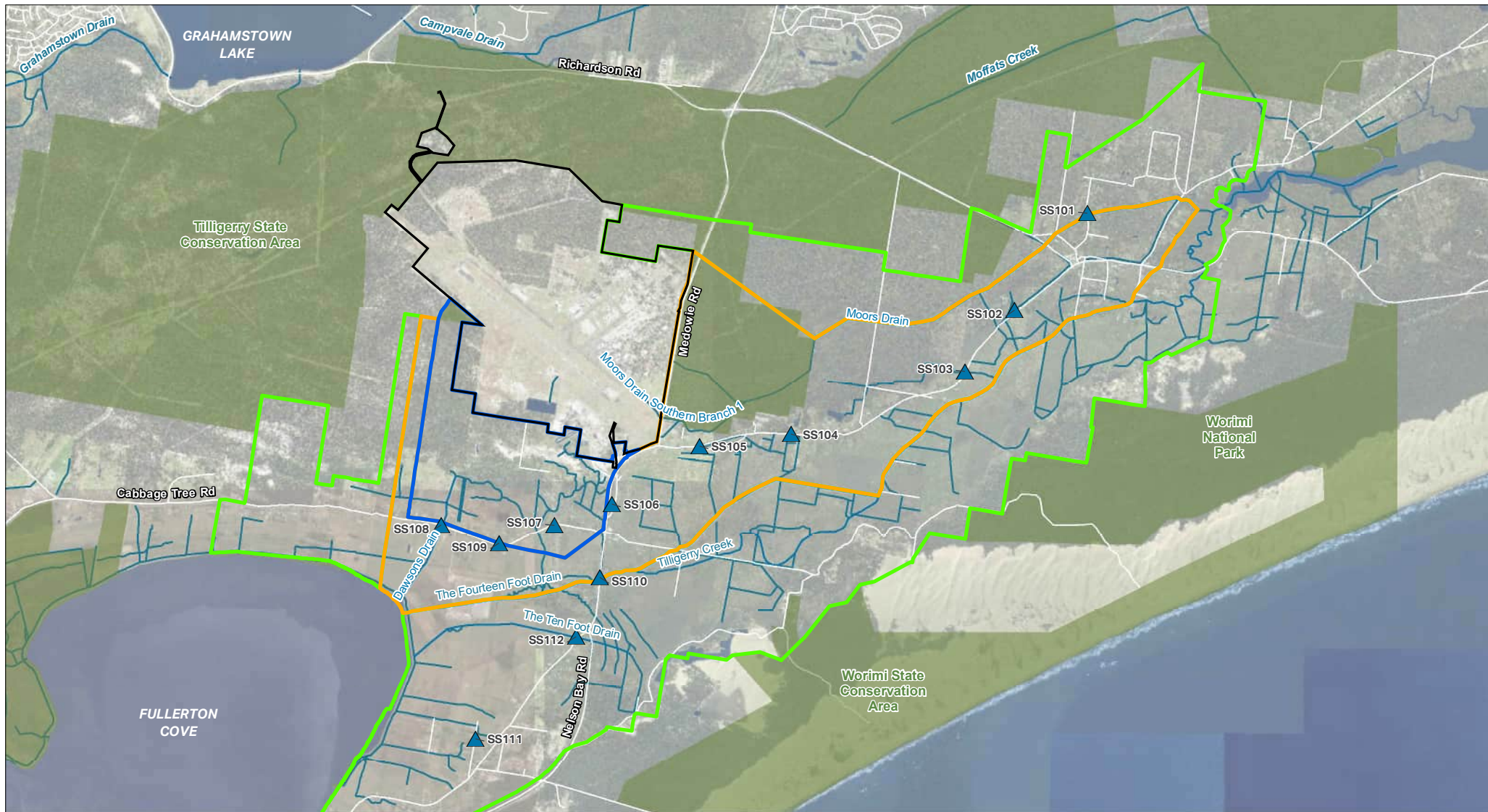
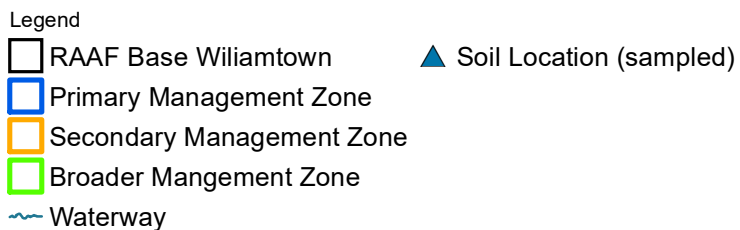


FIGURE F5: SOIL SAMPLING LOCATIONS

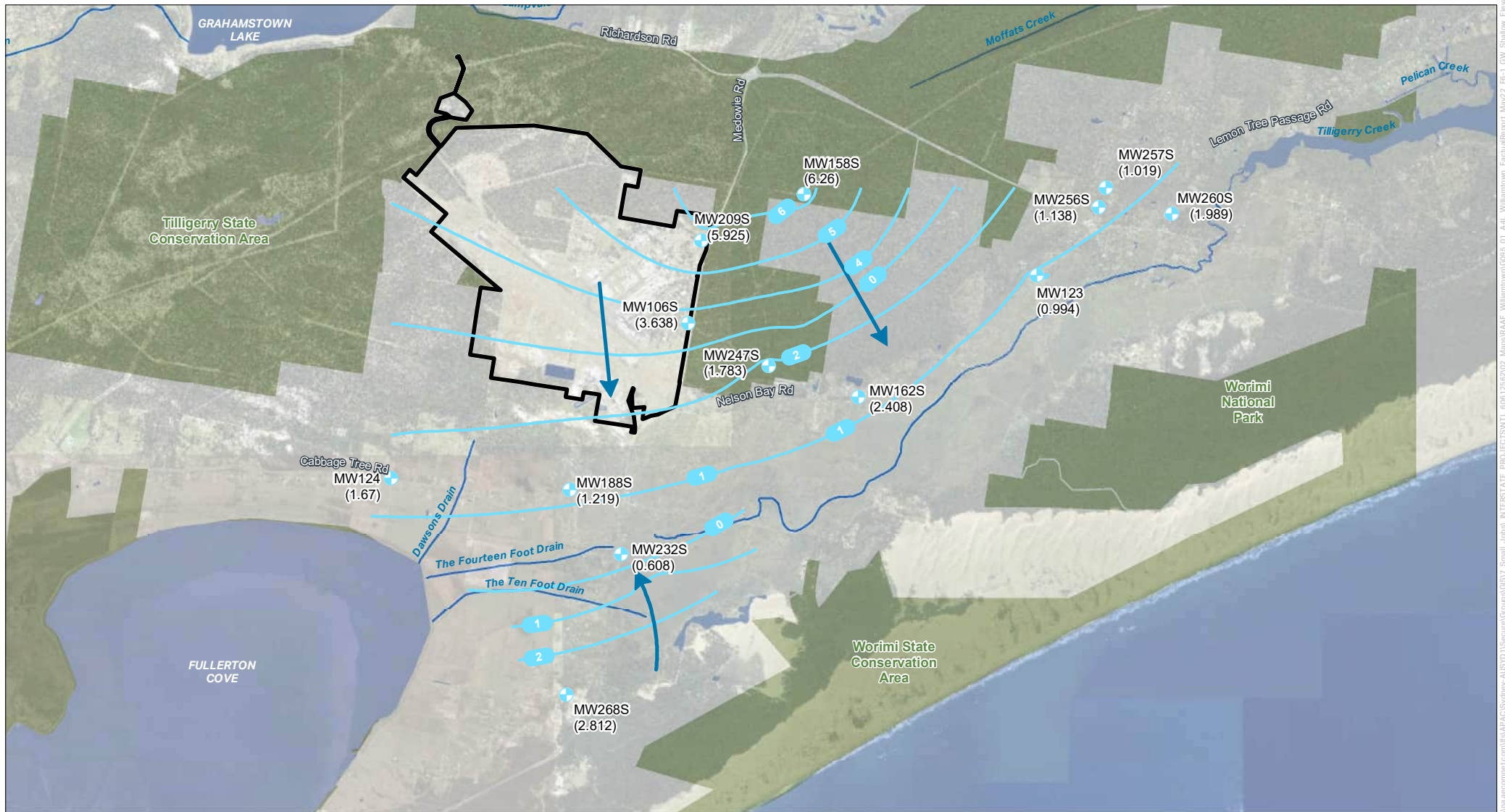


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PFAS OMP  
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**FIGURE F6-1: GROUNDWATER ELEVATION PLAN - SHALLOW**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- + Groundwater Location (gauged)
- Groundwater Elevation Contour (Shallow Wells; mAHd)
- Inferred Groundwater Flow Direction
- ~ Waterway

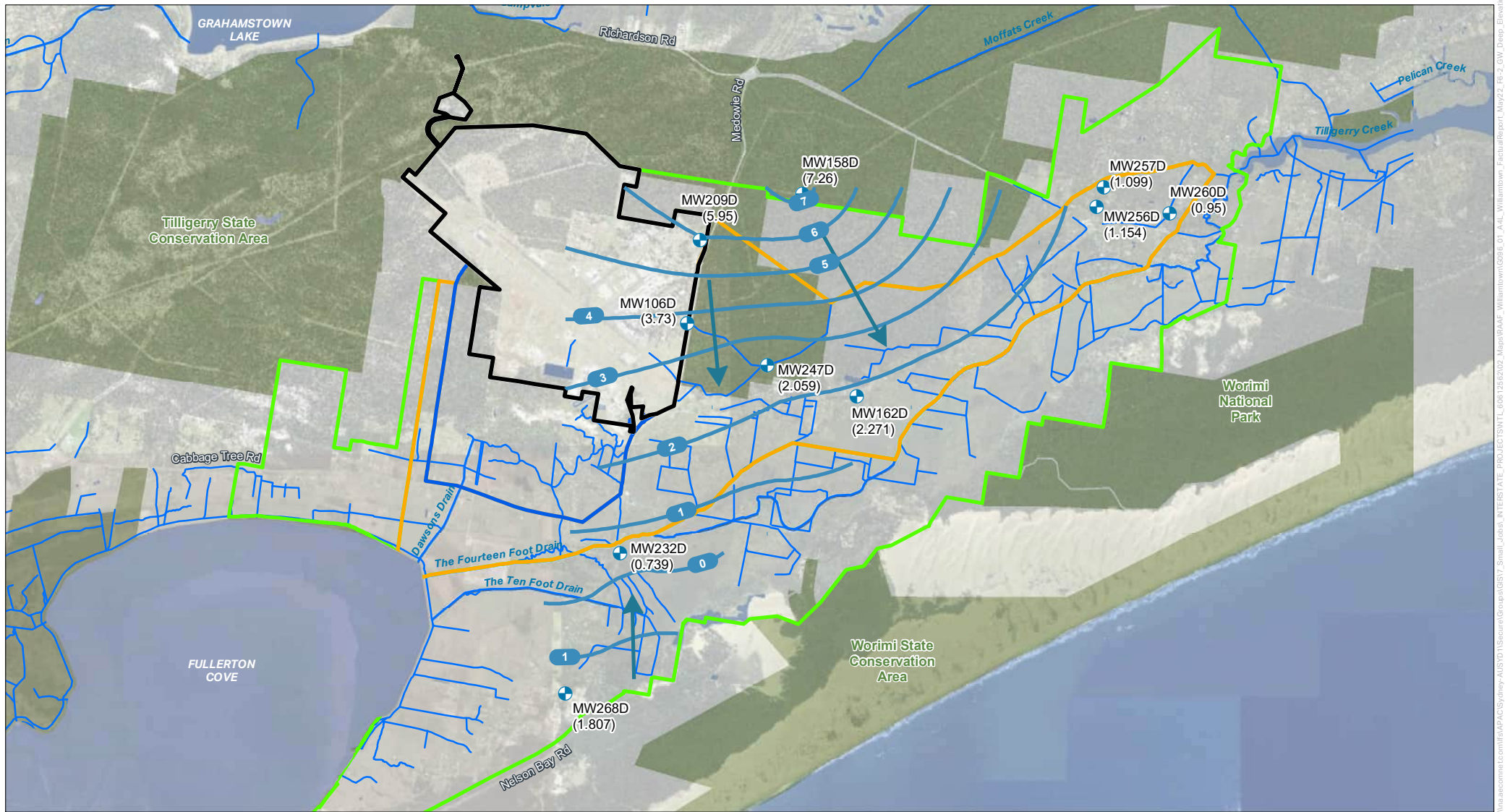


PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
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**RAAF Base Williamtown (0908)**  
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**60612562**  
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**FIGURE F6-2: GROUNDWATER ELEVATION PLAN - DEEP**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Groundwater Location (gauged)
- Groundwater Elevation Contour (Deep Wells; mAHD)
- ➔ Inferred Groundwater Flow Direction
- ~ Waterway



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
**Sampling Event Factual Report – May 2022**  
**RAAF Base Williamtown (0908)**  
 PROJECT NUMBER:  
**60612562**  
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# Appendix B

Tables

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW103D	MW103D	6.444	14.5	16	15	26/05/2022 15:09	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW103S	MW103S	6.572	2	5	4.0	26/05/2022 15:11	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW104D	MW104D	3.919	18.5	20	19.0	17/05/2022 8:38	1.560	2.359	20.08	Good condition.
MW104S	MW104S	3.955	3.5	5	4.0	17/05/2022 8:26	1.590	2.365	4.68	Good condition.
MW106D	MW106_D	4.77	18.5	20.0	19.0	24/05/2022 8:45	0.900	3.870	19.56	Good condition.
MW106D	MW106_D	4.77	18.5	20.0	19.0	2/06/2022 11:59	1.040	3.730	-	Selected gauging round
MW106S	MW106_S	4.678	3.5	5.0	3.8	24/05/2022 9:01	0.910	3.768	4.50	Good condition.
MW106S	MW106_S	4.678	3.5	5.0	3.8	2/06/2022 12:00	1.040	3.638	-	Selected gauging round
MW107D	MW107_D	3.362	18.5	20.0	19.0	20/05/2022 9:47	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW107S	MW107_S	3.322	2.0	5.0	4.0	20/05/2022 9:48	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW108D	MW108_D	3.08	18.5	20.0	19.0	19/05/2022 10:52	0.210	2.870	19.58	Good condition.
MW108S	MW108_S	2.95	2.0	5.0	3.8	19/05/2022 11:03	0.955	1.995	4.34	Good condition.
MW109D	MW109_D	3.157	18.5	20.0	19.0	19/05/2022 10:00	0.950	2.207	2.63	Good condition.
MW118	-	1.674	4.5	6.0	5.0	17/05/2022 9:39	0.345	1.329	5.94	Good condition.
MW120	-	2.03	3.5	5.0	n/a	18/05/2022 14:38	n/a	n/a	n/a	Well buried under roadbase stockpile
MW121	-	1.589	4.5	6.0	5.0	18/05/2022 14:12	0.210	1.379	5.96	Good condition.
MW122	-	1.851	5.5	7.0	n/a	18/05/2022 13:05	0.832	1.019	6.96	Good condition.
MW122	-	1.851	5.5	7.0	n/a	1/06/2022 12:37	n/a	n/a	n/a	Selected gauging round. Well not found.
MW123	-	1.524	4.5	6.0	5.0	18/05/2022 12:36	0.516	1.008	5.98	Good condition.
MW123	-	1.524	4.5	6.0	5.0	2/06/2022 10:41	0.530	0.994	-	Selected gauging round
MW124	-	2.42	6.0	7.5	6.8	16/05/2022 14:15	0.766	1.654	7.38	Gatic covered by soil, in construction area.
MW124	-	2.42	6.0	7.5	6.8	2/06/2022 13:50	0.750	1.670	-	Selected gauging round
MW125D	MW125_D	2.173	18.5	20.0	19.5	31/05/2022 12:06	n/a	n/a	n/a	Well buried under soil stockpile (roadworks)
MW125D	MW125_D	2.173	18.5	20.0	19.5	2/06/2022 13:08	n/a	n/a	n/a	Selected gauging round. Well not found, buried by soil from roadworks
MW125S	MW125_S	2.197	6.0	7.5	6.5	31/05/2022 12:05	n/a	n/a	n/a	Well buried under soil stockpile (roadworks)
MW125S	MW125_S	2.197	6.0	7.5	6.5	2/06/2022 13:09	n/a	n/a	n/a	Selected gauging round. Well not found, buried by soil from roadworks
MW126D	MW126_D	1.794	18.5	20.0	19.7	31/05/2022 13:07	0.645	1.149	20.35	Good condition.
MW126D	MW126_D	1.794	18.5	20.0	19.7	2/06/2022 14:19	n/a	n/a	n/a	Selected gauging round. Unable to gauge due to roadworks
MW126S	MW126_S	1.79	5.5	7.0	6.5	31/05/2022 13:16	0.635	1.155	6.47	Good condition.
MW126S	MW126_S	1.79	5.5	7.0	6.5	2/06/2022 14:20	n/a	n/a	n/a	Selected gauging round. Unable to gauge due to roadworks
MW128D	MW128_D	0.843	9.3	10.3	9.5	16/05/2022 11:38	0.060	0.783	10.44	Good condition.
MW128S	MW128_S	0.909	4.7	6.2	5.0	16/05/2022 11:57	0.960	-0.051	6.16	Good condition.
MW130D	MW130_D	5.858	15.0	16.5	15.8	1/06/2022 10:07	0.000	5.858	16.49	Good condition.
MW130S	MW130_S	5.794	1.0	4.0	3.0	1/06/2022 10:03	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW132D	MW132_D	6.138	15.0	16.5	15.5	30/05/2022 13:53	1.710	4.428	16.22	Good condition.
MW132S	MW132_S	6.082	3.0	6.0	5.0	30/05/2022 13:39	1.710	4.372	9.79	Good condition.
MW134D	MW134_D	8.75	18.5	20.0	19.0	30/05/2022 11:42	1.320	7.430	19.99	Good condition.
MW134I	MW134_I	8.71	10.0	11.5	10.5	30/05/2022 11:36	1.280	7.430	11.49	Good condition.
MW137	MW137	2.82	0.5	3.5	3.0	24/05/2022 15:35	0.470	2.350	3.35	Good condition.
MW139	-	1.986	1.0	4.0	n/a	31/05/2022 10:53	0.150	1.836	3.93	Good condition.
MW140	MW140	2.27	0.6	3.6	3.1	16/05/2022 15:00	0.473	1.797	3.60	Good condition.
MW146AD	MW146D_A	1.62	18.5	20.0	19.5	31/05/2022 12:23	0.430	1.190	20.19	Good condition.
MW146AD	MW146D_A	1.62	18.5	20.0	19.5	2/06/2022 14:19	n/a	n/a	n/a	Selected gauging round. Unable to gauge due to roadworks
MW146S	MW146_S	1.802	0.8	3.8	3.1	31/05/2022 12:35	n/a	n/a	n/a	Well not found, dense/tall grass
MW146S	MW146_S	1.802	0.8	3.8	3.1	2/06/2022 14:18	n/a	n/a	n/a	Selected gauging round. Unable to gauge due to roadworks
MW147D	MW147D	0.81	23.7	26.7	25.7	17/05/2022 13:25	0.100	0.710	26.28	Good condition.
MW147S	MW147S	0.71	1	4	3.5	17/05/2022 13:10	0.390	0.320	-	Good condition.
MW155	MW155	7.96	1.5	3.8	3.3	30/05/2022 10:40	n/a	n/a	n/a	Well not accessed, blocked by pipes associated with construction work
MW156D	MW156_D	7.34	19.5	21.0	20.5	24/05/2022 10:47	0.760	6.580	21.63	Damaged gatic
MW158D	MW156_D	7.34	19.5	21.0	20.5	1/06/2022 10:46	0.000	7.340	20.28	Good condition.
MW158D	MW156_D	7.34	19.5	21.0	20.5	2/06/2022 11:10	0.080	7.260	-	Selected gauging round
MW158S	MW158_S	6.26	1.0	4.0	3.0	1/06/2022 10:52	0.030	6.230	3.88	Good condition.
MW158S	MW158_S	6.26	1.0	4.0	3.0	2/06/2022 11:10	0.000	6.260	-	Selected gauging round
MW159D	MW159D	5.26	18.5	20	19.0	1/06/2022 9:25	1.200	4.060	21.23	Good condition.
MW159S	MW159S	4.987	0.7	3.7	3.2	1/06/2022 9:23	0.955	4.032	4.46	Good condition.
MW160	-	4.212	1.0	4.0	3.0	31/05/2022 8:48	0.500	3.712	4.03	Good condition.
MW161D	MW161D	2.057	18.8	23.3	22.3	1/06/2022 11:27	0.400	1.657	20.27	Good condition.
MW161S	MW161S	2.052	1	4	3.5	1/06/2022 11:35	0.420	1.632	4.02	Good condition.
MW162D	MW162_D	2.876	18.6	20.1	17.8	18/05/2022 13:49	1.7	1.222	20.17	Good condition.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW162D	MW162_D	2.876	18.6	20.1	17.8	2/06/2022 10:47	0.605	2.271	-	Selected gauging round
MW162S	MW162_S	2.838	1.5	4.5	3.2	18/05/2022 13:36	1.1	1.712	4.21	Good condition.
MW162S	MW162_S	2.838	1.5	4.5	3.2	2/06/2022 10:47	0.430	2.408	-	Selected gauging round
MW163	-	1.207	0.5	3.5	3.0	19/05/2022 15:27	0.745	0.462	4.12	Good condition.
MW166	-	7.1	0.8	3.8	3.0	25/05/2022 14:09	0.010	7.090	-	Good condition.
MW167	-	7.19	0.7	3.7	3.0	25/05/2022 12:49	0.790	6.400	4.31	Good condition.
MW168	-	6.78	0.7	3.7	2.5	26/05/2022 12:22	0.200	6.580	3.45	Good condition.
MW169D	MW169_D	5.8	18.0	19.5	18.3	19/05/2022 12:33	0.260	5.540	19.32	Good condition.
MW169S	MW169_S	5.83	0.7	3.7	3.0	19/05/2022 12:28	0.270	5.560	3.71	Good condition.
MW171D	MW171D	4.97	18.8	20.3	19.3	19/05/2022 11:44	0.205	4.765	-	Good condition.
MW171S	MW171S	5.02	0.7	3.7	3.2	19/05/2022 11:38	0.265	4.755	3.35	Good condition.
MW172	-	4.88	0.7	3.7	2.5	19/05/2022 12:06	0.075	4.805	3.36	Good condition.
MW175D	MW175_D	4.11	19.5	20.0	20.0	19/05/2022 10:18	1.106	3.004	21.50	Good condition.
MW177	-	6.458	2.6	5.6	n/a	1/06/2022 14:26	n/a	n/a	n/a	Well not accessed, overgrown Council track
MW178	-	1.76	1.2	4.2	3.0	1/06/2022 14:20	0.620	1.140	4.24	Good condition.
MW179D	MW179_D	4.76	18.5	20.0	18.5	19/05/2022 13:52	0.850	3.910	19.52	Good condition.
MW179S	MW179_S	4.71	0.8	3.8	3.0	19/05/2022 13:44	0.820	3.890	4.75	Good condition.
MW184D	MW184D	3.073	18.5	20	19.0	17/05/2022 9:05	0.710	2.363	20.25	Good condition.
MW184S	MW184S	3.106	1	4	3.5	17/05/2022 9:08	0.710	2.396	3.99	Good condition.
MW188D	MW188_D	1.354	18.5	20.0	19.0	20/05/2022 9:25	n/a	n/a	n/a	Selected gauging round. Well not found.
MW188D	MW188_D	1.354	18.5	20.0	19.0	31/05/2022 13:46	n/a	n/a	n/a	Well not found, presumed buried
MW188S	MW188_S	1.439	0.8	3.8	2.8	31/05/2022 13:41	0.2	1.239	4.67	Damaged gatic
MW188S	MW188_S	1.439	0.8	3.8	2.8	2/06/2022 13:29	0.220	1.219	-	Selected gauging round
MW195	MW195	1.05	0.8	3.8	3.3	16/05/2022 10:56	0.000	1.050	3.82	Good condition.
MW196	-	6.76	0.8	3.8	3.2	30/05/2022 9:21	0.525	6.235	3.78	Good condition.
MW198	-	6.11	0.8	3.8	3.7	30/05/2022 8:51	0.850	5.260	3.83	Missing gatic lid
MW200	MW200	6.47	1	4	3.5	30/05/2022 9:07	0.575	5.895	3.69	Good condition.
MW201D	MW201D	5.81	18.1	19.6	18.6	30/05/2022 8:30	0.535	5.275	19.42	Good condition.
MW201S	MW201S	5.8	1	4	3.5	30/05/2022 8:18	0.510	5.290	4.03	Good condition.
MW202D	MW202_D	5.17	19.5	21.0	20.0	19/05/2022 13:13	0.851	4.319	20.96	Good condition.
MW202S	MW202_S	5.21	0.8	3.8	3.2	19/05/2022 13:05	0.890	4.320	3.69	Good condition.
MW208	-	6.99	1.2	4.2	3.2	24/05/2022 13:30	1.670	5.320	4.11	Damaged gatic
MW209D	MW209_D	6.53	18.0	19.5	18.5	24/05/2022 11:15	0.415	6.115	19.63	Good condition.
MW209D	MW209_D	6.53	18.0	19.5	18.5	2/06/2022 11:46	0.580	5.950	-	Selected gauging round
MW209S	MW209_S	6.47	0.6	3.6	2.5	24/05/2022 11:26	0.370	6.100	2.55	Good condition.
MW209S	MW209_S	6.47	0.6	3.6	2.5	2/06/2022 11:46	0.545	5.925	-	Selected gauging round
MW210D	MW210D	7.35	18.5	20	19.0	24/05/2022 12:30	2.460	4.890	20.10	Good condition.
MW210S	MW210S	7.22	2	5	4.5	24/05/2022 12:31	2.460	4.760	4.75	Good condition.
MW212	-	6.04	1.2	4.2	3.0	24/05/2022 11:58	1.300	4.740	4.12	Good condition.
MW226D	MW226_D	1.357	18.5	20.0	n/a	17/05/2022 9:00	n/a	n/a	n/a	Well not found
MW226S	MW226_S	1.457	1.5	3.0	n/a	17/05/2022 9:05	n/a	n/a	n/a	Well not found
MW229D	MW229_D	1.92	18.5	20.0	19.0	31/05/2022 12:02	n/a	n/a	n/a	Well not found, dense/tall grass
MW229D	MW229_D	1.92	18.5	20.0	19.0	2/06/2022 13:07	n/a	n/a	n/a	Selected gauging round. Well not found, vegetation overgrown
MW229S	MW229_S	1.91	1.0	4.0	3.0	31/05/2022 12:03	n/a	n/a	n/a	Well not found, dense/tall grass
MW229S	MW229_S	1.91	1.0	4.0	3.0	2/06/2022 13:07	n/a	n/a	n/a	Selected gauging round. Well not found
MW230S	MW230_S	0.939	2.0	4.0	n/a	16/05/2022 13:40	0.000	0.939	4.03	Flooded gatic, j-cap not secured
MW231D	MW231_D	0.571	16.0	17.5	16.5	18/05/2022 9:35	0.000	0.571	17.61	Water overflowing from Well
MW231S	MW231_S	0.625	1.0	4.0	3.0	18/05/2022 9:43	0.220	0.405	4.00	Good condition.
MW232D	MW232_D	1.324	18.5	20.0	19.0	18/05/2022 8:45	0.570	0.754	21.03	Good condition.
MW232D	MW232_D	1.324	18.5	20.0	19.0	2/06/2022 12:34	0.585	0.739	-	Selected gauging round
MW232S	MW232_S	1.148	1.0	4.0	3.5	18/05/2022 8:41	0.560	0.588	4.58	Good condition.
MW232S	MW232_S	1.148	1.0	4.0	3.5	2/06/2022 12:34	0.540	0.608	-	Selected gauging round
MW235D	MW235_D	0.302	18.5	20.0	19.0	18/05/2022 8:00	n/a	n/a	n/a	Well not accessed, residential appointment declined
MW235S	MW235_S	0.238	1.0	4.0	3.0	18/05/2022 8:00	n/a	n/a	n/a	Well not accessed, residential appointment declined
MW236D	MW236_D	2.715	18.5	20.0	19.0	16/05/2022 9:45	0.636	2.079	20.47	Good condition.
MW236S	MW236_S	2.707	1.0	4.0	3.0	16/05/2022 9:30	0.634	2.073	3.94	Good condition.
MW238D	MW238_D	2.211	18.5	20.0	19.5	16/05/2022 12:31	0.530	1.681	20.26	Good condition.
MW238S	MW238_S	2.27	1.0	4.0	3.0	16/05/2022 11:55	0.614	1.656	-	Damaged gatic lid
MW240D	MW240D	5.742	18.5	20.0	19.0	26/05/2022 10:19	0.5	5.257	20.31	Good condition.
MW241D	MW241_D	5.449	18.5	20.0	19.0	24/05/2022 14:43	0.1	5.349	20.23	Good condition.
MW241S	MW241_S	5.559	1.0	4.0	2.5	24/05/2022 14:39	0.170	5.389	3.20	Good condition.
MW244D	MW244_D	9.457	18.5	20.0	19.0	30/05/2022 9:45	0.595	8.862	20.93	Good condition.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW244S	MW244_S	9.603	1.0	4.0	3.0	30/05/2022 9:51	0.8	8.853	4.69	Good condition.
MW245D	MW245D	9.311	18.5	20	19.0	30/05/2022 11:05	0.910	8.401	21.22	Good condition.
MW245S	MW245S	9.292	1	4	3.5	30/05/2022 11:13	0.840	8.452	2.19	Good condition.
MW247D	MW247_D	2.529	18.5	20.0	19.0	18/05/2022 11:40	0.740	1.789	20.29	Good condition.
MW247D	MW247_D	2.529	18.5	20.0	19.0	2/06/2022 10:59	0.470	2.059	-	Selected gauging round
MW247S	MW247_S	2.468	1.0	4.0	3.0	18/05/2022 11:35	0.615	1.853	3.99	Good condition.
MW247S	MW247_S	2.468	1.0	4.0	3.0	2/06/2022 10:59	0.685	1.783	-	Selected gauging round
MW252S	MW252S	1.103	1	4	3.5	1/06/2022 12:33	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW255D	MW255D	1.26	18.5	20	19.0	18/05/2022 10:54	0.675	0.585	20.26	Good condition.
MW255S	MW255S	1.258	1	4	3.5	18/05/2022 11:08	0.762	0.496	3.96	Good condition.
MW256D	MW256_D	1.534	18.5	20.0	19.0	17/05/2022 12:21	0.461	1.073	20.57	Good condition.
MW256D	MW256_D	1.534	18.5	20.0	19.0	2/06/2022 10:35	0.380	1.154	-	Selected gauging round
MW256S	MW256_S	1.518	1.0	4.0	3.0	17/05/2022 12:32	0.470	1.048	3.99	Missing bolts replaced
MW256S	MW256_S	1.518	1.0	4.0	3.0	2/06/2022 10:36	0.380	1.138	-	Selected gauging round
MW257D	MW257_D	1.819	18.5	20.0	19.0	17/05/2022 11:55	0.780	1.039	20.20	Good condition.
MW257D	MW257_D	1.819	18.5	20.0	19.0	2/06/2022 10:31	0.720	1.099	-	Selected gauging round
MW257S	MW257_S	1.639	1.0	4.0	3.0	17/05/2022 11:37	0.685	0.954	3.83	Good condition.
MW257S	MW257_S	1.639	1.0	4.0	3.0	2/06/2022 10:31	0.620	1.019	-	Selected gauging round
MW258D	MW258_D	2.903	18.5	20.0	19.0	17/05/2022 10:26	0.352	2.551	20.36	Flooded gatic with water above TOC. Removed prior to gauging and sampling
MW258S	MW258_S	2.916	1.0	4.0	3.0	17/05/2022 10:49	0.397	2.519	3.94	Good condition.
MW260D	MW260_D	2.08	18.5	20.0	19.0	18/05/2022 10:18	1.165	0.915	20.26	Dense grass covering gatic, missing bolts replaced
MW260D	MW260_D	2.08	18.5	20.0	19.0	2/06/2022 10:21	1.130	0.950	-	Selected gauging round
MW260S	MW260_S	2.124	1.0	4.0	3.0	18/05/2022 10:12	1.190	0.934	3.96	Dense grass covering gatic
MW260S	MW260_S	2.124	1.0	4.0	3.0	2/06/2022 10:20	0.135	1.989	-	Selected gauging round
MW263D	MW263_D	1.314	18.5	20.0	19.0	18/05/2022 8:32	0.450	0.864	20.26	Flooded gatic with water below TOC. Removed prior to gauging and sampling
MW263S	MW263_S	1.328	1.0	4.0	3.2	18/05/2022 8:41	0.435	0.893	3.93	Good condition.
MW264D	MW264D	9.347	18.5	20	19.0	2/06/2022 8:49	0.000	9.347	20.06	Good condition.
MW264S	MW264S	9.492	1	4	3.5	2/06/2022 8:53	0.200	9.292	3.23	Good condition.
MW266D	MW266_D	0.267	18.5	20.0	19.5	27/05/2022 7:54	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW266S	MW266_S	0.229	1.0	4.0	3.0	27/05/2022 7:54	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW267D	MW267_D	1.779	16.0	17.5	16.6	18/05/2022 8:00	n/a	n/a	n/a	Well not accessed, residential appointment declined
MW267S	MW267_S	1.755	1.1	4.0	2.9	18/05/2022 8:00	n/a	n/a	n/a	Well not accessed, residential appointment declined
MW268D	MW268D	3.362	18.5	20.0	19.0	2/06/2022 14:17	1.555	1.807	20.16	Selected gauging round. Gatic covered by dense grass.
MW268S	MW268_S	3.232	2.0	5.0	4.0	17/05/2022 14:47	1.540	1.692	5.01	Gauging only location. Good condition.
MW268S	MW268_S	3.232	2.0	5.0	4.0	2/06/2022 12:48	0.420	2.812	-	Selected gauging round
MW270D	MW270D	1.412	18.5	20	19.0	17/05/2022 13:43	0.355	1.057	20.30	Dense grass covering gatic
MW270S	MW270S	1.411	2	4	3.5	17/05/2022 13:15	0.360	1.051	3.86	Dense grass covering gatic
MW271D	MW271_D	1.308	18.5	20.0	19.0	16/05/2022 10:50	0.065	1.243	18.93	Good condition.
MW271S	MW271_S	1.316	1.0	4.0	3.0	16/05/2022 10:40	0.003	1.313	3.97	Good condition.
MW278D	MW278_D	1.289	18.5	20.0	19.0	31/05/2022 12:54	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW278S	MW278_S	1.253	1.5	3.0	2.3	31/05/2022 12:53	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW279S	MW279_S	1.295	0.8	3.8	3.2	19/05/2022 16:00	0.615	0.680	4.65	Good condition.
MW280S	MW280_S	3.831	1	4	3.5	20/05/2022 9:53	0.000	3.831	3.86	Good condition.
MW281S	MW281_S	5.29	1.0	4.0	3.0	26/05/2022 9:57	0.330	4.960	3.99	Good condition.
MW282S	MW282_S	5.37	1.0	4.0	3.0	26/05/2022 10:08	0.120	5.250	3.52	Good condition.
MW315D	MW320D	6.16	18.0	20.0	n/a	26/05/2022 15:28	0.200	5.960	3.78	Good condition.
MW315S	MW320S	6.18	1.0	4.0	n/a	26/05/2022 15:28	0.200	5.980	-	Good condition.
MW316D	MW319D	1.2	18.0	20.0	19.0	20/05/2022 10:10	0.580	0.620	21.08	Good condition.
MW317D	MW317D	7.96	18.5	20	19.0	30/05/2022 12:04	0.510	7.450	20.56	Good condition.
MW317S	MW317_S	7.97	1.0	4.0	3.0	30/05/2022 12:11	0.530	7.440	4.09	Good condition.
MW318D	MW318_D	2.63	18.5	20.0	19.0	31/05/2022 9:37	0.200	2.430	20.29	Good condition.
MW318S	MW318_S	2.67	1.0	4.0	2.9	31/05/2022 9:23	0.260	2.410	3.90	Good condition.
MW406	W6	8.27	unknown	unknown	2.4	24/05/2022 9:40	0.900	7.370	2.98	Good condition.
MW433	W33	6.926	3.0	4.0	3.0	24/05/2022 10:51	0.460	6.466	3.68	Good condition.
MW466	W66	4.32	1.0	4.0	2.2	19/05/2022 10:32	1.550	2.770	3.21	Good condition.
MW468	W68	4.02	1.0	4.0	3.0	19/05/2022 10:04	1.200	2.820	4.06	Good condition.
MW814	PS7_BORE 46	n/a	n/a	n/a	n/a	30/05/2022 12:24	n/a	n/a	n/a	Well located within flooded area. Not gauged
MW826	PS9_BORE 1	n/a	n/a	n/a	n/a	30/05/2022 14:10	n/a	n/a	n/a	Well not found
MW829	PS9_BORE 30	n/a	n/a	n/a	n/a	30/05/2022 14:20	0.270	n/a	11.97	Good condition.
MW842	SK3496_D	unknown	unknown	unknown	n/a	2/06/2022 9:27	0.650	n/a	5.99	Good condition.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW844	SK3496_S	unknown	unknown	unknown	n/a	2/06/2022 9:40	0.770	n/a	8.85	Good condition.
POT046	BWS046	n/a	n/a	n/a	n/a	27/05/2022 10:41	n/a	n/a	n/a	Residential bore tap
POT085	BWS085	n/a	n/a	n/a	n/a	16/05/2022 15:25	n/a	n/a	n/a	Residential bore tap
POT087	BWS087	n/a	n/a	n/a	n/a	27/05/2022 11:26	n/a	n/a	n/a	Residential bore tap
POT089	BWS089	n/a	n/a	n/a	n/a	27/05/2022 11:49	n/a	n/a	n/a	Residential bore tap
POT107	BWS107	n/a	n/a	n/a	n/a	31/05/2022 11:16	n/a	n/a	n/a	Residential bore tap
POT144	BWS144	n/a	n/a	n/a	n/a	16/05/2022 9:10	n/a	n/a	n/a	Residential bore tap
POT236	BWS236	n/a	n/a	n/a	n/a	18/05/2022 14:50	n/a	n/a	n/a	Residential bore tap
POT257	BWS257	n/a	n/a	n/a	n/a	18/05/2022 15:11	n/a	n/a	n/a	Residential bore tap
POT382	-	n/a	n/a	n/a	n/a	18/05/2022 10:02	n/a	n/a	n/a	Residential bore tap

**Notes**

mbTOC meters below Top of Casing  
 mAHD meters Australian Height Datum  
 n/a Not applicable  
 - Not measured



Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Sample Comment	Field Measurements					
				Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW104D	MW104D	17/05/2022 8:45	Clear, low turbidity, no odour, no sheen. Black suspended particulates at base of Hydrasleeve.	1.53	19.2	92.1	5.92	-26.0	179.8
MW104S	MW104S	17/05/2022 8:45	Light Yellow, low turbidity, no odour, no sheen. Black suspended particles.	10.70	19.4	233.0	5.24	-75.0	130.8
MW106D	MW106_D	24/05/2022 9:00	Clear, low turbidity, sulfurous odour, no sheen. Brown organic sediment at base of Hydrasleeve.	0.39	18.5	364.0	6.06	19.0	224.8
MW106S	MW106_S	24/05/2022 9:06	Clear, low turbidity, no odour, no sheen. Brown fine sand sediment at base of Hydrasleeve.	1.25	19.0	107.7	5.05	51.8	257.6
MW108D	MW108_D	19/05/2022 10:58	Clear, low turbidity, no odour, no sheen. Brown suspended silt.	1.30	18.7	226.4	5.50	42.2	248.0
MW108S	MW108_S	19/05/2022 11:17	Clear, low turbidity, no odour, no sheen. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	1.21	18.1	82.4	4.80	74.9	280.7
MW109D	MW109_D	19/05/2022 10:05	Yellow, low turbidity, no odour, no sheen. Suspended organic matter. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	4.98	16.3	304.0	5.28	16.8	222.6
MW118	-	17/05/2022 9:49	Light Brown, no turbidity, no odour, no sheen. Brown organic matter at base of Hydrasleeve.	1.43	18.6	196.5	6.14	28.0	233.8
MW121	-	18/05/2022 14:17	Clear, low turbidity, sulfurous odour, no sheen. Fine suspended organic matter at base of Hydrasleeve.	2.25	21.2	274.6	6.15	-11.2	194.6
MW122	-	18/05/2022 13:15	Brown, high turbidity, no odour, no sheen. silt at base of Hydrasleeve.	0.83	20.6	405.1	5.66	106.3	312.1
MW123	-	18/05/2022 12:43	Light Brown, medium turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	1.76	21.5	162.3	6.06	75.0	280.8
MW124	-	16/05/2022 14:45	Light Yellow, low turbidity, no odour, no sheen.	3.25	21.7	69.4	5.04	61.2	267.0
MW126D	MW126_D	31/05/2022 13:12	Light Brown, no turbidity, no odour, no sheen. Fine grey sediment at base of Hydrasleeve.	0.80	18.2	90.7	5.94	70.2	276.0
MW126S	MW126_S	31/05/2022 13:19	Light Brown, low turbidity, no odour, no sheen. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	3.50	17.8	139.3	6.20	64.9	270.7
MW128D	MW128_D	16/05/2022 11:45	Clear, low turbidity, no odour, no sheen.	0.40	20.1	1356.0	6.93	-87.0	118.8
MW128S	MW128_S	16/05/2022 12:00	Clear, no turbidity, organic odour, no sheen. Black suspended particles.	1.08	23.2	6433.0	6.50	9.0	214.8
MW130D	MW130_D	1/06/2022 10:12	Grey / Brown, medium turbidity, organic odour, no sheen. Grey sand at base of Hydrasleeve.	0.55	16.0	251.7	5.21	23.6	229.4
MW132D	MW132_D	30/05/2022 14:00	Light Yellow, medium turbidity, sulfurous odour, no sheen. Brown sand at base of Hydrasleeve.	0.82	18.6	169.1	4.90	83.0	288.8
MW132S	MW132_S	30/05/2022 13:52	Light Brown, medium turbidity, sulfurous odour, no sheen. Suspended brown organic matter and sediment at base of Hydrasleeve.	1.50	19.0	140.0	4.42	105.0	310.8
MW134D	MW134_D	30/05/2022 11:49	Clear, no turbidity, no odour, no sheen.	0.71	18.3	159.4	4.52	91.4	297.2
MW134I	MW134_I	30/05/2022 11:41	Light Yellow, no turbidity, organic odour, no sheen. Brown suspended sediment.	1.06	18.5	151.2	3.82	138.2	344.0
MW137	MW137	24/05/2022 15:37	Orange / Brown, medium turbidity, no odour, no sheen. Brown suspended sediment and organic matter.	2.70	19.2	184.9	4.17	158.8	364.6
MW139	-	31/05/2022 10:58	Dark Brown, medium turbidity, sulfurous odour, no sheen. Fine suspended sediment. Organic matter floating on top of Hydrasleeve.	1.09	17.5	322.7	4.93	32.4	238.2
MW140	MW140	16/05/2022 15:15	Brown, medium turbidity, sulfurous odour, no sheen. Suspended sediment.	1.25	21.0	90.9	4.76	59.9	265.7
MW146AD	MW146D_A	31/05/2022 12:32	Grey / Brown, medium turbidity, sulfurous odour, no sheen. Suspended silt and fine brown organic matter. Grey sand at base of Hydrasleeve.	0.53	18.7	141.1	6.03	-24.8	181.0
MW147D	MW147D	17/05/2022 13:30	Clear, low turbidity, no odour, no sheen.	5.78	20.4	35940.0	6.00	45.5	251.3
MW147S	MW147S	17/05/2022 13:15	Brown, medium turbidity, no odour, no sheen.	7.45	20.5	20110.0	6.15	96.2	302.0
MW156D	MW156_D	24/05/2022 10:50	Light Brown, medium turbidity, no odour, no sheen. Sand and organic sludge at base of Hydrasleeve.	5.83	18.7	263.8	5.57	51.5	257.3
MW158D	MW156_D	1/06/2022 10:49	Clear, no turbidity, no odour, no sheen. Well flooded up to toc. Overflowed when opened. Fine black suspended particles.	1.07	16.5	366.0	5.85	8.5	214.3
MW158S	MW158_S	1/06/2022 10:56	Clear, low turbidity, sulfurous odour, no sheen. Suspended brown organic matter.	1.12	16.6	130.9	4.92	14.0	219.8
MW159D	MW159D	1/06/2022 9:29	Light Grey, medium turbidity, organic odour, no sheen. Fine brown sand at base of Hydrasleeve.	1.20	16.9	388.0	5.31	74.6	280.4
MW159S	MW159S	1/06/2022 9:23	Dark Brown, high turbidity, organic odour, no sheen. Brown suspended particles.	2.45	14.8	172.8	4.75	129.2	335.0
MW160	-	31/05/2022 8:54	Light Yellow, low turbidity, no odour, no sheen.	0.95	16.9	373.2	4.13	98.7	304.5
MW161D	MW161D	1/06/2022 11:32	Light Brown, low turbidity, no odour, no sheen. Small amount of brown suspended organic matter.	1.12	16.6	181.0	5.25	123.4	329.2
MW161S	MW161S	1/06/2022 11:39	Light Yellow, medium turbidity, organic odour, no sheen. Sediment at base of Hydrasleeve.	1.66	16.4	227.0	4.82	61.3	267.1
MW162D	MW162_D	18/05/2022 13:56	Light Brown, low turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	1.31	19.4	132.5	5.59	112.3	318.1
MW162S	MW162_S	18/05/2022 13:41	Clear, low turbidity, no odour, no sheen. Suspended silt at base of Hydrasleeve.	4.20	20.0	60.9	5.86	109.0	314.8
MW163	-	19/05/2022 15:35	Clear, low turbidity, no odour, no sheen. Black silt at base of Hydrasleeve.	1.67	17.6	7133.0	6.31	83.1	288.9
MW166	-	25/05/2022 14:14	Dark Brown, high turbidity, no odour, no sheen. Black organic matter at base of Hydrasleeve. Suspended light brown sediment.	1.42	19.4	79.3	4.52	159.4	365.2
MW167	-	25/05/2022 12:54	Red Orange, medium turbidity, organic odour, no sheen.	1.50	19.0	93.0	5.41	101.7	307.5
MW168	-	26/05/2022 12:24	Light Brown, medium turbidity, no odour, no sheen.	3.50	20.4	162.8	5.37	73.3	279.1
MW169D	MW169_D	19/05/2022 12:36	Clear, low turbidity, no odour, no sheen.	1.64	19.4	100.2	5.80	39.4	245.2
MW169S	MW169_S	19/05/2022 12:31	Light Brown, medium turbidity, no odour, no sheen. Suspended brown organic matter.	1.57	19.6	79.1	5.33	20.6	226.4
MW171D	MW171D	19/05/2022 11:47	Light Grey, low turbidity, no odour, no sheen. Black silt at base of Hydrasleeve.	0.60	19.1	277.4	5.85	83.4	289.2
MW171S	MW171S	19/05/2022 11:44	Clear, low turbidity, no odour, no sheen. Suspended silt. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	2.64	18.7	82.3	4.05	167.7	373.5
MW172	-	19/05/2022 12:13	Light Yellow, low turbidity, no odour, no sheen. Suspended organic matter.	0.46	18.6	223.4	4.84	3.6	209.4
MW175D	MW175_D	19/05/2022 10:19	Clear, low turbidity, no odour, no sheen. Suspended organic matter.	4.79	19.3	183.9	5.49	11.4	217.2
MW178	-	1/06/2022 14:21	Yellow, medium turbidity, sulfurous odour, no sheen. Brown sand at base of Hydrasleeve.	1.09	16.2	339.7	5.09	107.4	313.2
MW179D	MW179_D	19/05/2022 13:56	Light Grey, low turbidity, no odour, no sheen. Black sediment at base of Hydrasleeve.	1.04	19.4	192.7	5.84	32.4	238.2
MW179S	MW179_S	19/05/2022 13:48	Clear, medium turbidity, no odour, no sheen. Suspended white matter.	4.35	18.5	48.3	4.80	41.8	247.6
MW184D	MW184D	17/05/2022 9:20	Clear, low turbidity, no odour, no sheen.	1.51	17.9	37.8	5.80	79.1	284.9
MW184S	MW184S	17/05/2022 9:10	Dark Brown, high turbidity, no odour, no sheen. Suspended sediment and organics.	1.35	18.0	267.4	5.66	66.2	272.0
MW188S	MW188_S	31/05/2022 13:44	Grey / Brown, low turbidity, no odour, no sheen. Suspended silt.	1.50	17.9	1209.0	7.21	67.2	273.0
MW195	MW195	16/05/2022 11:00	Black / Grey, medium turbidity, organic odour, no sheen. Biosheen on water surface.	6.60	19.6	795.0	6.53	51.0	256.8
MW196	-	30/05/2022 9:26	Yellow, medium turbidity, organic odour, no sheen. Suspended fine brown particulates. Brown organic matter at base of Hydrasleeve.	1.39	19.3	71.7	4.53	151.7	357.5
MW198	-	30/05/2022 8:56	Brown, medium turbidity, no odour, no sheen. Brown sand at base of Hydrasleeve.	2.31	19.0	195.6	6.34	114.6	320.4
MW200	MW200	30/05/2022 9:12	Dark Brown, high turbidity, organic odour, no sheen. White suspended organic matter. Brown sand at base of Hydrasleeve.	0.88	18.5	57.4	4.45	95.5	301.3
MW201D	MW201D	30/05/2022 8:40	Light Brown, low turbidity, organic odour, no sheen. Suspended brown sediment and organic matter. Second weight inside of Hydrasleeve.	0.96	18.8	301.3	5.60	25.5	231.3
MW201S	MW201S	30/05/2022 8:24	Light Brown, low turbidity, sulfurous odour, no sheen. Brown organic matter at base of Hydrasleeve. as well as suspended.	1.33	16.8	181.2	4.95	77.6	283.4

Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Sample Comment	Field Measurements					
				Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW202D	MW202_D	19/05/2022 13:17	Brown, high turbidity, no odour, no sheen. Black matter at base of Hydrasleeve.	1.89	19.2	34.3	6.14	109.9	315.7
MW202S	MW202_S	19/05/2022 13:08	Clear, medium turbidity, no odour, no sheen. Sand at base of Hydrasleeve.	6.62	20.5	87.5	5.52	146.7	352.5
MW208	-	24/05/2022 13:33	Clear, low turbidity, no odour, no sheen. Suspended light brown organic matter.	1.99	20.1	163.5	5.47	123.7	329.5
MW209D	MW209_D	24/05/2022 11:20	Black / Grey, high turbidity, no odour, no sheen. Grey / black suspended sediment.	2.24	18.4	471.8	5.90	32.1	237.9
MW209S	MW209_S	24/05/2022 11:30	Clear, low turbidity, no odour, no sheen. Hydrasleeve blocked in well, sample collected with bailer.	0.32	18.4	305.4	5.76	30.6	236.4
MW210D	MW210D	24/05/2022 12:35	Light Brown, low turbidity, no odour, no sheen. Suspended light brown organic matter.	2.67	21.9	67.3	6.10	36.9	242.7
MW210S	MW210S	24/05/2022 12:36	Light Brown, low turbidity, no odour, no sheen. Light brown suspended organic matter.	1.28	22.5	345.9	5.63	97.5	303.3
MW212	-	24/05/2022 11:59	Grey / Brown, high turbidity, no odour, no sheen. Grey / Brown suspended sediment.	6.65	19.9	197.1	6.27	47.6	253.4
MW230S	MW230_S	16/05/2022 13:45	Light Brown, low turbidity, no odour, no sheen.	1.78	21.0	409.1	5.57	13.0	218.8
MW231D	MW231_D	18/05/2022 9:37	Dark Brown, high turbidity, sulfurous odour, no sheen.	0.47	18.6	18800.0	6.50	-224.6	-18.8
MW231S	MW231_S	18/05/2022 9:47	Light Brown, medium turbidity, sulfurous odour, no sheen. Suspended brown sediment, black sand at base of Hydrasleeve.	1.32	19.5	19997.0	6.68	-122.5	83.3
MW232D	MW232_D	18/05/2022 8:49	Brown, medium turbidity, no odour, no sheen. Brown suspended and settling sediment.	1.52	17.6	17530.0	7.10	85.6	291.4
MW232S	MW232_S	18/05/2022 8:42	Clear, no turbidity, no odour, no sheen. Black suspended particulates.	1.24	16.4	1997.0	7.30	65.4	271.2
MW236D	MW236_D	16/05/2022 9:55	Clear, no turbidity, no odour, no sheen. Some minor sediment at base of Hydrasleeve.	1.98	19.1	119.8	5.43	10.3	216.1
MW236S	MW236_S	16/05/2022 9:40	Clear, medium turbidity, no odour, no sheen. White suspended organic matter.	2.16	19.4	473.3	4.71	105.9	311.7
MW238D	MW238_D	16/05/2022 12:38	Clear, no turbidity, no odour, no sheen.	1.45	21.9	137.1	5.76	50.2	256.0
MW238S	MW238_S	16/05/2022 12:02	Yellow, low turbidity, no odour, no sheen. Brown suspended organic matter.	0.59	21.0	133.0	5.12	50.1	255.9
MW240D	MW240D	26/05/2022 10:22	Grey / Brown, medium turbidity, no odour, no sheen.	2.51	18.6	79.9	3.96	91.0	296.8
MW241D	MW241_D	24/05/2022 14:46	Black / Grey, medium turbidity, no odour, no sheen. Suspended and settling silt.	0.61	18.2	111.3	5.66	18.5	224.3
MW241S	MW241_S	24/05/2022 14:42	Light Brown, low turbidity, no odour, no sheen. Suspended light brown sediment and organic matter.	1.47	19.6	116.1	5.21	91.0	296.8
MW244D	MW244_D	30/05/2022 9:49	Grey / Brown, medium turbidity, organic odour, no sheen. Silt at base of Hydrasleeve.	1.17	19.6	216.7	5.46	100.9	306.7
MW244S	MW244_S	30/05/2022 9:57	Clear, no turbidity, no odour, no sheen.	1.19	18.2	112.8	3.95	127.8	333.6
MW245D	MW245D	30/05/2022 11:11	Clear, low turbidity, no odour, no sheen. Some suspended organic matter.	2.30	17.9	222.0	5.40	137.7	343.5
MW245S	MW245S	30/05/2022 11:16	Light Yellow, low turbidity, no odour, no sheen. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	0.71	16.4	136.5	4.16	133.4	339.2
MW247D	MW247_D	18/05/2022 11:45	Clear, no turbidity, no odour, no sheen.	1.14	18.2	64.5	5.61	113.2	319.0
MW247S	MW247_S	18/05/2022 11:40	Light Brown, low turbidity, no odour, no sheen.	1.36	19.5	29.7	4.83	92.0	297.8
MW255D	MW255D	18/05/2022 11:04	Light Grey, no turbidity, organic odour, no sheen. Back film on Hydrasleeve.	2.36	20.8	2566.0	6.30	-25.2	180.6
MW255S	MW255S	18/05/2022 11:16	Light Brown, medium turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	0.40	21.3	368.8	5.83	-61.9	143.9
MW256D	MW256_D	17/05/2022 12:27	Clear, low turbidity, no odour, no sheen. Suspended particulates and sediment at base of Hydrasleeve.	1.50	18.9	90.0	5.66	26.6	232.4
MW256S	MW256_S	17/05/2022 12:44	Brown, high turbidity, no odour, no sheen. Dark brown silt at base of Hydrasleeve.	4.19	19.5	92.2	4.67	47.3	253.1
MW257D	MW257_D	17/05/2022 12:02	Clear, low turbidity, no odour, no sheen. Black suspended solids and sediment at base of Hydrasleeve.	2.13	19.1	61.8	5.40	104.3	310.1
MW257S	MW257_S	17/05/2022 11:42	Light Brown, medium turbidity, no odour, no sheen. Organic suspended matter and sediment at base of Hydrasleeve.	6.08	20.0	54.9	4.59	152.8	358.6
MW258D	MW258_D	17/05/2022 10:35	Light Brown, low turbidity, no odour, no sheen.	3.77	18.3	344.5	6.16	19.2	225.0
MW258S	MW258_S	17/05/2022 10:55	Dark Brown, high turbidity, organic odour, no sheen. Brown sediment at base of Hydrasleeve.	3.61	19.4	144.0	4.93	19.9	225.7
MW260D	MW260_D	18/05/2022 10:30	Brown, medium turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	0.78	19.8	1382.0	6.79	-34.7	171.1
MW260S	MW260_S	18/05/2022 10:17	Clear, low turbidity, no odour, no sheen. Suspended organics and sediment at base of Hydrasleeve.	1.03	22.2	1673.0	6.48	-39.6	166.2
MW263D	MW263_D	18/05/2022 8:38	Light Grey, low turbidity, no odour, no sheen. Black suspended sediment.	2.44	17.1	1339.0	7.51	-66.1	139.7
MW263S	MW263_S	18/05/2022 8:59	Light Brown, medium turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	0.80	18.3	389.2	5.17	-66.4	139.4
MW264D	MW264D	2/06/2022 8:51	Grey / Brown, medium turbidity, no odour, no sheen. Fine grey/brown sand at base of Hydrasleeve.	0.74	14.4	342.2	5.77	60.9	266.7
MW264S	MW264S	2/06/2022 8:57	Yellow, medium turbidity, sulfurous odour, no sheen. Suspended white organic matter. Brown and white sediment at base of Hydrasleeve.	1.24	15.5	160.0	4.84	41.1	246.9
MW270D	MW270D	17/05/2022 13:50	Yellow / Brown, medium turbidity, sulfurous odour, no sheen. Suspended organic particles and sediment.	0.44	19.7	286.4	6.31	-54.9	150.9
MW270S	MW270S	17/05/2022 13:36	Light Yellow, low turbidity, sulfurous odour, no sheen. Sediment at base of Hydrasleeve.	4.51	20.1	659.0	5.98	24.3	230.1
MW271D	MW271_D	16/05/2022 10:55	Brown, high turbidity, no odour, no sheen.	0.76	18.2	187.0	5.69	40.7	246.5
MW271S	MW271_S	16/05/2022 10:45	Clear, low turbidity, organic odour, no sheen.	1.01	19.0	401.3	4.92	35.0	240.8
MW279S	MW279_S	19/05/2022 16:05	Light Grey, medium turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	5.34	16.9	1028.0	6.45	-25.1	180.7
MW280S	MW280_S	20/05/2022 10:02	Clear, low turbidity, organic odour, no sheen. Fine suspended organic matter. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve not reinstalled due to flooding gatic.	6.46	15.4	192.8	6.06	-18.1	187.7
MW281S	MW281_S	26/05/2022 10:02	Orange / Brown, high turbidity, sulfurous odour, no sheen.	0.04	17.5	934.0	6.10	-77.9	127.9
MW282S	MW282_S	26/05/2022 10:13	Orange / Brown, high turbidity, organic odour, no sheen.	1.03	16.5	131.7	3.59	60.0	265.8
MW315D	MW320D	26/05/2022 15:31	Yellow, medium turbidity, sulfurous odour, no sheen. Sand at base of Hydrasleeve.	1.69	19.5	98.5	5.19	87.0	292.8
MW315S	MW320S	26/05/2022 15:35	Clear, low turbidity, sulfurous odour, no sheen. Sand at base of Hydrasleeve.	0.82	17.9	233.7	4.30	51.9	257.7
MW316D	MW319D	20/05/2022 10:24	Black / Grey, medium turbidity, no odour, no sheen. Silt at base of Hydrasleeve.	1.40	16.8	22261.0	6.59	109.7	315.5
MW317D	MW317D	30/05/2022 12:10	Light Brown, medium turbidity, sulfurous odour, no sheen. Brown sand at base of Hydrasleeve.	10.32	18.5	194.6	5.03	77.0	282.8
MW317S	MW317_S	30/05/2022 12:18	Yellow, low turbidity, organic odour, no sheen. Organic matter suspended and at base of Hydrasleeve.	0.72	17.8	123.2	4.20	85.1	290.9
MW318D	MW318_D	31/05/2022 9:48	Brown, high turbidity, no odour, no sheen. Brown sand at base of Hydrasleeve.	1.16	18.8	291.7	5.54	27.0	232.8
MW318S	MW318_S	31/05/2022 9:24	Brown, high turbidity, organic odour, no sheen. Brown sediment at base of Hydrasleeve.	1.01	17.0	355.4	5.09	4.7	210.5
MW406	W6	24/05/2022 9:45	Light Brown, low turbidity, no odour, no sheen.	3.57	18.7	72.3	5.44	136.7	342.5
MW433	W33	24/05/2022 10:52	Light Brown, medium turbidity, no odour, no sheen. Sand at base of Hydrasleeve.	4.44	18.7	114.7	5.67	34.0	239.8
MW466	W66	19/05/2022 10:39	Yellow, low turbidity, no odour, no sheen.	6.09	17.9	99.5	4.81	18.4	224.2

Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Sample Comment	Field Measurements					
				Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW468	W68	19/05/2022 10:20	Light Yellow, medium turbidity, no odour, no sheen. White suspended particles.	3.53	15.6	1700.0	6.75	-59.3	146.5
MW829	PS9_BORE 30	30/05/2022 14:22	Clear, no turbidity, no odour, no sheen. Orange fine suspended matter. No Hydrasleeve present, sample collected with bailer. New Hydrasleeve installed.	4.29	17.5	132.9	5.17	153.2	359.0
MW842	SK3496_D	2/06/2022 9:39	Clear, no turbidity, no odour, no sheen. Grab sample with peristaltic pump.	1.61	18.7	183.9	5.89	77.8	283.6
MW844	SK3496_S	2/06/2022 9:51	Clear, no turbidity, no odour, no sheen. Grab sample with peristaltic pump.	2.47	16.9	234.0	5.55	99.0	304.8
POT046	BWS046	27/05/2022 10:42	Clear, no turbidity, sulfurous odour, no sheen.	1.45	16.9	194.6	5.15	14.7	220.5
POT085	BWS085	16/05/2022 15:45	Clear, no turbidity, no odour, no sheen.	6.36	20.8	217.6	6.23	521.0	726.8
POT087	BWS087	27/05/2022 11:26	Clear, no turbidity, sulfurous odour, no sheen.	0.84	18.8	389.9	5.26	58.8	264.6
POT089	BWS089	27/05/2022 11:49	Clear, no turbidity, no odour, no sheen.	0.62	16.8	263.5	4.96	137.7	343.5
POT107	BWS107	31/05/2022 11:17	Clear, no turbidity, no odour, no sheen.	6.23	17.3	464.5	5.85	122.9	328.7
POT144	BWS144	16/05/2022 9:45	Clear, no turbidity, no odour, no sheen.	6.40	19.5	248.0	4.54	134.8	340.6
POT236	BWS236	18/05/2022 14:52	Clear, no turbidity, sulfurous odour, no sheen.	4.17	19.9	165.5	5.86	44.0	249.8
POT257	BWS257	18/05/2022 15:12	Clear, no turbidity, no odour, no sheen.	7.14	17.2	316.2	5.35	95.0	300.8
POT382	-	18/05/2022 10:10	Clear, no turbidity, no odour, no sheen.	1.39	22.1	2125.0	7.55	40.3	246.1

Notes

- mV               milliVolts
- mg/L            milligrams per Litre
- °C               degrees Celsius
- µS/cm          microSiemens per centremetre
- Corrected field Redox measurement Eh = Er + 205.8
- Not measured
- n/a             Not applicable

Table T3 - Surface Water Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Location Comments	Sample Comment	Field Measurements					
					Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
SW001	MD1	18/05/2022 10:45	Drainage channel. Weeds and grasses in drain. Waterbody width (approx.): 3.0 m, banks up to 4.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	Clear, no turbidity, no odour, no sheen.	6.8	19.3	233.2	6.34	3.6	209.4
SW005	MD5	18/05/2022 9:35	Drainage channel with concrete outlet. Grasses and trees along banks. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.2 m.	Pale yellow, low turbidity, no odour, no sheen. Suspended organic material.	8.14	15.1	208.4	5.73	48.4	254.2
SW006	MD6	18/05/2022 11:15	Drainage channel. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.0 m. Water flow observed.	Clear, no turbidity, no odour, no sheen.	6.83	18	51.2	6.45	70	275.8
SW007	MD7	18/05/2022 11:01	Drainage channel. Grasses in drain and bushes along banks. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	Clear, no turbidity, no odour, no sheen.	7.95	18.7	59.6	6.35	39	244.8
SW009	MD8	17/05/2022 11:25	Drainage channel. Aquatic vegetation present. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	Clear, no turbidity, no odour, no sheen.	4.15	18.9	90.3	6.3	86.3	292.1
SW011	MD10	n/a	Not accessible, Moors Drain flooded.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW014	MD14	16/05/2022 14:50	Drainage channel with concrete outlet. Trees along banks; aquatic vegetation and suspended organic material present. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.5 to 1.0 m. No water flow observed.	Clear, no turbidity, no odour, no sheen.	5.75	20.7	98.4	5.71	91.8	297.6
SW019	TC12	27/05/2022 12:05	Creek. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 2.0 m. Water flow observed.	Yellow / brown, medium turbidity, no odour, no sheen.	4.14	17.2	360.8	5.86	121.7	327.5
SW023	TC6A	17/05/2022 10:58	Creek / Drainage channel. Grass and trees along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.4 m. Water flow observed.	Yellow, low turbidity, no odour, no sheen. Suspended organic material.	4.06	18.7	830	6.46	129	334.8
SW024	TC7	16/05/2022 15:26	Creek / Drainage channel with concrete outlets. Trees and reeds on one side of bank and grass on the other. Waterbody width (approx.): 8.0 to 9.0 m. Waterbody depth (approx.): 1.0 to 2.0 m. No water flow observed.	Yellow, medium turbidity, no odour, no sheen.	3.58	21.7	772	6.49	118.9	324.7
SW047	BD03	19/05/2022 13:28	Drainage channel. Dense vegetation along banks; aquatic plants and suspended algal growth present. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.5 m. No water flow observed.	Clear, low turbidity, no odour, no sheen. Suspended organic material.	2.3	20	50.5	5.53	125.1	330.9
SW048	BD04	19/05/2022 12:51	Drainage channel. Reeds and grasses in drain. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.2 m.	Clear, low turbidity, no odour, no sheen.	8.21	18.6	23.4	5.15	78.8	284.6
SW055	DD1	19/05/2022 11:06	Concrete drainage channel. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.4 m. Water flow observed.	Clear, low turbidity, no odour, biosheen appearance.	4	16.8	91.2	5.9	-6.9	198.9
SW059	DD2	17/05/2022 9:52	Drainage channel. Vegetation along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): >1.0 m.	Pale yellow, no turbidity, no odour, no sheen.	2.65	17	100.1	5.32	74	279.8
SW060	DD3	18/05/2022 14:57	Drainage channel. Vegetation and duckweed along banks. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): >1.0 m. No water flow observed.	clear, low turbidity, no odour, no sheen. Suspended organic material.	4.6	19.9	83.7	5.72	108.7	314.5
SW062	DD5	16/05/2022 13:17	Concrete drainage channel. Waterbody width (approx.): 6.0 m. Waterbody depth (approx.): 0.6 m. No water flow observed.	Yellow, low turbidity, no odour, biosheen appearance.	3.72	19.8	930	6.57	102.1	307.9
SW072	FFD4	n/a	Not accessible, unable to secure appointment with property owner.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW079	TC2	16/05/2022 12:05	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.5 m.	Pale yellow, low turbidity, organic odour, no sheen. Suspended black particles.	4.49	21.7	1107	6.89	-5.1	200.7
SW081	TFD1	16/05/2022 12:57	Drainage channel with concrete outlet. Reeds in water and along banks; algal growth and biosheen on water surface. Waterbody width (approx.): 1.0 to 3.0 m at different points. Waterbody depth (approx.): 0.5 to 1.0 m. No water flow observed.	Yellow, medium turbidity, no odour, biosheen appearance. Suspended organic material.	4.49	21.3	550	6.71	65.5	271.3
SW082	TFD2	n/a	Not accessible, unable to secure appointment with property owner.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW108	LC	19/05/2022 9:44	Lake Cochran. Vegetation along banks. Waterbody width (approx.): 250 x 150 m. Waterbody depth (approx.): >2 m. No water flow observed.	Clear, low turbidity, no odour, no sheen. Suspended organic material.	5.68	16.2	112.6	6.06	153.8	359.6
SW110	LC_B	19/05/2022 9:13	Lake Cochran. Vegetation along banks. Waterbody width (approx.): 250 x 150 m. Waterbody depth (approx.): >2 m. Water flow observed.	Clear, low turbidity, no odour, no sheen.	6.88	17	110.8	7.15	94.6	300.4
SW259	FCD4	27/05/2022 8:18	Drainage channel. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 2.0 m. Water flow observed.	Pale yellow, no turbidity, no odour, no sheen.	3.22	14.9	949	7.14	51.7	257.5

Notes

mV                    millivolts  
 mg/L                milligrams per Litre  
 °C                    degrees Celsius  
 µS/cm                microSiemens per centremetre  
 Corrected field Redox measurement Eh = Er + 205.8  
 -                        Not measured  
 n/a                    Not applicable

Table T4 - Sediment and Surface Soil Observations

Location Code	Alternative Name	Sampled Date Time	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD001	MD1	18/05/2022 10:47	0.05	0.1	SAND: yellow brown, medium to fine grain, 10% organic material. No odour or staining.
SD005	MD5	18/05/2022 9:35	0.05	0.1	Gravelly SAND silt: brown, medium grained, with fine to medium gravel with some silt. No odour or staining.
SD006	MD6	18/05/2022 11:17	0.1	0.3	SAND: light brown-yellow, fine to medium grained, 5% organic material. No odour or staining.
SD007	MD7	18/05/2022 11:03	0.05	0.3	SAND: Yellow-brown, fine to medium grained. 5% organic material. No odour or staining.
SD009	MD8	17/05/2022 11:25	0.2	0	SAND: light brown, fine to medium grained, 10% organic material. No odour or staining.
SD011	MD10	n/a	n/a	n/a	Not sampled. Area flooded, no access to Location.
SD014	MD14	16/05/2022 14:52	0.05	0.3	SAND: light brown, fine grained, 40% organic matter, saturated. No odour or staining.
SD019	TC12	27/05/2022 12:05	0.2	0.3	Sandy SILT: brown, medium grain sand, 10% organic material. No odour or staining.
SD023	TC6A	17/05/2022 11:00	0.05	0.1	Sandy CLAY: dark brown, fine grained sand, 10% organic material. No odour or staining.
SD024	TC7	16/05/2022 15:27	0.05	0.1	Sandy SILT: light brown, fine to medium grained sand, 20% organic material. No odour or staining.
SD047	BD03	19/05/2022 13:33	0.05	0.1	Gravelly SAND: brown, large (20-40mm) semi angular gravel pieces. No odour or staining.
SD048	BD04	19/05/2022 12:55	0.05	0.1	SAND: brown, fine to medium grained, 15% organic material, saturated. No odour or staining .
SD055	DD1	19/05/2022 11:12	0.05	0.1	Gravelly SAND: brown, fine grained sand, 5-20mm sub angular gravel, 10% organic material (rootlets). No odour or staining.
SD059	DD2	17/05/2022 9:50	0.1	0.3	Silty SAND: brown, medium grained, trace gravels (10-30mm). No odour or staining.
SD060	DD3	18/05/2022 14:59	0.2	0.3	Sandy SILT: brown, fine to medium grained. No odour or staining.
SD062	DD5	16/05/2022 13:19	0.05	0.1	Silty CLAY: Brown, medium plasticity, saturated, 10% organic matter, organic odour no staining.
SD072	FFD4	n/a	n/a	n/a	Not sampled. Location not accessed, residential appointment declined.
SD079	TC2	16/05/2022 11:58	0.1	0.3	sandy CLAY: black-brown, medium plasticity, fine to medium grained sand, 30% organic matter. Strong organic odour no staining
SD081	TFD1	16/05/2022 13:00	0.1	0.3	Sandy CLAY: brown, fine grained sand, high plasticity, 10% organic matter (rootlets). Slight organic odour no staining.
SD082	TFD2	n/a	n/a	n/a	Not sampled. Location not accessed, residential appointment declined.
SD108	LC	19/05/2022 9:45	0.05	0.1	Sandy SILT: brown, fine to medium grained sand, 35% organic material. Slight organic odour no staining
SD110	LC_B	19/05/2022 9:18	0.05	0.1	SAND: brown, fine to medium grained, 30% organic material. No odour or staining
SD254	FC1A	27/05/2022 8:35	0.05	0.1	Silty CLAY: brown, 20% organic material (rootlets), <5% shell content, saturated. Organic odour no staining
SD255	FC1B	27/05/2022 8:30	0.05	0.1	Silty Clay: brown, 15% organic material, 5% shell content, saturated. Organic odour no staining
SD259	FCD4	27/05/2022 8:21	0.2	0.3	Clayey SAND: brown-grey, medium grained sand, high plasticity clay, saturated. No odour or staining
SD326	FC1C	27/05/2022 8:25	0.05	0.1	CLAY: grey with black intrusions, 40% organic material, saturated. Organic odour, no staining.
SS101	SS001, SS01	16/05/2022 14:54	0.01	0.1	Silty SAND: brown, fine to medium grained, moist. No odour no staining.
SS102	SS002, SS02	16/05/2022 14:24	0.05	0.1	Sandy SILT: brown, fine grained sand, moist. 5% organic material (rootlets). No odour or staining.
SS103	SS003, SS03	16/05/2022 14:11	0.01	0.1	Sandy SILT: brown, some sub angular gravels (5-30mm), saturated. No odour or staining.
SS104	SS004, SS04	16/05/2022 13:55	0.01	0.1	Silty SAND: brown, fine to medium grained, semi-angular gravels (5-10mm), moist. No odour or staining.
SS105	SS005, SS05	16/05/2022 13:45	0.01	0.1	Silty SAND: brown, 20% organic material (rootlets), moist. No odour or staining
SS106	SS006, SS06	16/05/2022 15:45	0.05	0.1	Sandy CLAY: brown, fine grained sand, 20% organic material. No odour or staining.
SS107	SS007, SS07	18/05/2022 14:27	0.03	0.1	Silty SAND: brown fine to medium grained, <5% organic content (rootlets), moist. No odour or staining.
SS108	SS008, SS08	17/05/2022 9:45	0.01	0.1	SAND: brown, fine to medium grained, 15% organic content (rootlets). No odour or staining.
SS109	SS009, SS09	27/05/2022 10:10	0.02	0.1	Gravelly SAND: brown, rounded gravel (10-30 mm), 20% organic material (rootlets), saturated. No odour or staining.
SS110	SS010, SS10	16/05/2022 13:15	0.05	0.1	Sandy SILT: brown, 40% organic material, moist. No odour or staining
SS111	SS011, SS11	16/05/2022 12:39	0	0.1	Sandy CLAY: brown, high plasticity, fine to medium gained, 10% organic matter, moist. No odour or staining.
SS112	SS012, SS12	16/05/2022 13:01	0.05	0.1	SAND: brown, mine to medium grained. No odour or staining.

Notes

n/a Not applicable

Table T5 - Groundwater Analytical Results

		Per- and Poly-fluoroalkyl Substances																													
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDoDA)	Perfluorododecanoic acid (PFDDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR		0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PFAS NEMP 2020 Drinking Water		0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%		19	0.00023																												

Location Code	Alt. Name	Sampled Date	Field ID	Sample Type	Lab Report #	0.88	44.3	8	52.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.97	0.47	<0.02	2.48	1.1	0.45	0.04	<0.02	<0.02	0.6	0.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	59.6	
MW104D	MW104D	17/05/2022	0908_MW104D_220517	Normal	ES2217542	0.07	4.76	0.85	5.61	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	0.02	<0.02	0.14	0.07	0.03	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	6.09	
MW106D	MW106D	24/05/2022	0908_MW106D_220524	Normal	ES2219407	0.14	1.64	2.57	4.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.24	0.07	<0.02	0.46	0.2	0.07	<0.02	<0.02	<0.02	0.23	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	5.62	
MW106S	MW106S	24/05/2022	0908_MW106S_220524	Normal	ES2219407	<0.01	0.04	0.17	0.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.24
MW108D	MW108D	19/05/2022	0908_MW108D_220519	Normal	ES2217533	<0.01	<0.01	0.21	0.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.26	
MW108S	MW108S	19/05/2022	0908_MW108S_220519	Normal	ES2217533	0.03	0.83	0.62	1.45	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	1.59	
MW109D	MW109D	19/05/2022	0908_MW109D_220519	Normal	ES2217533	0.6	30.9	6.48	37.4	<0.05	0.08	<0.05	<0.05	<0.02	<0.02	<0.05	0.34	0.26	<0.02	0.92	0.72	0.18	0.07	<0.02	<0.02	0.22	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	40.9	
MW118	MW118	17/05/2022	0908_MW118_220517	Normal	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	
MW118	MW118	17/05/2022	0908_QC100_220517	Field_D	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01	
MW121	MW121	18/05/2022	0908_MW121_220518	Normal	ES2217533	<0.01	0.16	0.04	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.2	
MW122	MW122	18/05/2022	0908_MW122_220518	Normal	ES2217533	<0.01	<0.01	0.02	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.02
MW123	MW123	18/05/2022	0908_MW123_220518	Normal	ES2217533	<0.01	0.1	0.08	0.18	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.18	
MW124	MW124	16/05/2022	0908_MW124_220516	Normal	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01
MW126D	MW126D	31/05/2022	0908_MW126D_220531	Normal	ES2219407	<0.01	0.01	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.01
MW126S	MW126S	31/05/2022	0908_MW126S_220531	Normal	ES2219407	0.28	6.02	5.03	11	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.47	0.14	<0.02	1.25	0.61	0.17	<0.02	<0.02	<0.02	0.37	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	14.4	
MW128D	MW128D	16/05/2022	0908_MW128D_220516	Normal	ES2217533	<0.01	0.01	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.01
MW128S	MW128S	16/05/2022	0908_MW128S_220516	Normal	ES2217533	<0.01	0.01	0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.02
MW130D	MW130D	1/06/2022	0908_MW130D_220601	Normal	ES2219407	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.01
MW132D	MW132D	30/05/2022	0908_MW132D_220530	Normal	ES2219407	0.06	0.41	0.7	1.11	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	<0.02	<0.02	0.08	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	1.41
MW132D	MW132D	30/05/2022	0908_QC218_220530	Interlab_D	297361	0.06	0.38	0.61	0.99	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	0.02	<0.02	<0.01	0.07	0.1	0.01	<0.02	<0.05	<0.02	0.02	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	<0.02	1.3	
MW132S	MW132S	30/05/2022	0908_MW132S_220530	Normal	ES2219407	<0.01	0.34	0.14	0.48	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.48
MW132S	MW132S	30/05/2022	0908_QC118_220530	Field_D	ES2219407	<0.01	0.52	0.2	0.72	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.72	
MW134D	MW134D	30/05/2022	0908_MW134D_220530	Normal	ES2219407	<0.01	0.02	0.03	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	0.05
MW134I	MW134I	30/05/2022	0908_MW134I_220530	Normal	ES2219407	<0.01	<0.01	0.03	0.03	<0.05																											



Table T5 - Groundwater Analytical Results

		Per- and Poly-fluoroalkyl Substances																													
		Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTTDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDoDA)	Perfluorododecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR		0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PFAS NEMP 2020 Drinking Water		0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%		19	0.00023																												

Location Code	Alt. Name	Sampled Date	Field ID	Sample Type	Lab Report #	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	
MW162S	MW162S	18/05/2022	0908_MW162S_220518	Normal	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	
MW162S	MW162S	18/05/2022	0908_QC108_220518	Field_D	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	
MW163	MW163	19/05/2022	0908_MW163_220519	Normal	ES2217533	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	
MW166	MW166	25/05/2022	0908_MW166_220525	Normal	ES2219407	0.09	12.6	1.02	13.6	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.03	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	14
MW167	MW167	25/05/2022	0908_MW167_220525	Normal	ES2219407	0.02	2.44	0.31	2.75	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	2.83
MW168	MW168	26/05/2022	0908_MW168_220526	Normal	ES2219407	0.24	7.87	3.39	11.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.15	0.04	<0.02	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	12.5
MW169D	MW169D	19/05/2022	0908_MW169D_220519	Normal	ES2217533	<0.01	0.08	0.1	0.18	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.24
MW169S	MW169S	19/05/2022	0908_MW169S_220519	Normal	ES2217533	0.01	0.12	0.13	0.25	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.37
MW171D	MW171D	19/05/2022	0908_MW171D_220519	Normal	ES2217533	0.01	0.01	0.93	0.94	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.3	0.08	<0.02	<0.02	<0.02	<0.02	0.33	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.07
MW171S	MW171S	19/05/2022	0908_MW171S_220519	Normal	ES2217533	0.09	0.87	0.58	1.45	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.82
MW172	MW172	19/05/2022	0908_MW172_220519	Normal	ES2217533	0.05	0.05	1.28	1.33	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.26	0.09	<0.02	<0.02	<0.02	<0.02	0.17	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.22
MW175D	MW175D	19/05/2022	0908_MW175D_220519	Normal	ES2217533	0.05	3.45	0.76	4.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.08	<0.02	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.81
MW178	MW178	1/06/2022	0908_MW178_220601	Normal	ES2219407	<0.01	0.04	0.1	0.14	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.23
MW179D	MW179D	19/05/2022	0908_MW179D_220519	Normal	ES2217533	<0.01	0.01	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.01
MW179S	MW179S	19/05/2022	0908_MW179S_220519	Normal	ES2217533	0.44	0.22	1.67	1.89	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	0.11	<0.02	<0.02	<0.02	<0.02	0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.04
MW184D	MW184D	17/05/2022	0908_MW184D_220517	Normal	ES2217542	0.16	5.22	1.46	6.68	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.16	0.06	<0.02	<0.02	<0.02	<0.02	0.11	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	7.77
MW184S	MW184S	17/05/2022	0908_MW184S_220517	Normal	ES2217542	0.03	2.8	1.19	3.99	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.34
MW188S	MW188S	31/05/2022	0908_MW188S_220531	Normal	ES2219407	<0.01	0.02	<0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.02
MW195	MW195	16/05/2022	0908_MW195_220516	Normal	ES2217533	0.01	0.05	0.09	0.14	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.17
MW196	MW196	30/05/2022	0908_MW196_220530	Normal	ES2219407	0.06	7.36	0.4	7.76	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	8.02	
MW198	MW198	30/05/2022	0908_MW198_220530	Normal	ES2219407	0.08	3.42	3.46	6.88	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.27	0.06	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	7.88
MW198	MW198	30/05/2022	0908_QC117_220530	Field_D	ES2219407	0.14	4.44	4.6	9.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.36	0.07	<0.02	<0.02	<0.02	<0.02	0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	10.4
MW200	MW200	30/05/2022	0908_MW200_220530	Normal	ES2219407	<0.01	0.4	0.06	0.46	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.48
MW201D	MW201D	30/05/2022	0908_MW201D_220530	Normal	ES2219407	<0.01	<0.01	0.03	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.03
MW201S	MW201S	30/05/2022	0908_MW201S_220530	Normal	ES2219407	0.02	1.76	0.82	2.58	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.71
MW202D	MW202D	19/05/2022	0908_MW202D_220519	Normal	ES2217533	<0.01	0.12	0.1	0.22	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0															







Table T6 - Surface Water Analytical Results

	Per- and Poly-fluoroalkyl Substances																													
	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS
LOR	0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												
PFAS NEMP 2020 Recreational Water	10			2																										

Location Code	Alt. Name	Sampled Date	Field ID	Sample Type	Lab Report #	0.03	1.65	0.37	2.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	0.03	<0.02	0.08	0.04	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.25
SW001	MD1	18/05/2022	0908_SW001_220518	Normal	ES2217534	0.02	1.68	0.25	1.93	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.11	<0.02	0.29	0.14	0.05	0.05	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.03
SW006	MD6	18/05/2022	0908_SW006_220518	Normal	ES2217534	0.12	18.8	1.05	19.8	<0.05	0.07	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.11	<0.02	0.29	0.14	0.05	0.05	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	20.8
SW007	MD7	18/05/2022	0908_SW007_220518	Normal	ES2217534	0.11	11.2	1	12.2	<0.05	0.08	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.09	<0.02	0.28	0.11	0.05	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	13
SW009	MD8	17/05/2022	0908_SW009_220517	Normal	ES2217534	0.08	7.95	0.82	8.77	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.07	<0.02	0.22	0.08	0.04	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	9.36
SW014	MD14	16/05/2022	0908_QC201_220516	Interlab_D	297361	0.02	0.96	0.22	1.2	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	0.02	<0.02	<0.01	0.05	0.02	<0.01	<0.02	<0.05	<0.02	0.03	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	1.3
SW014	MD14	16/05/2022	0908_SW014_220516	Normal	ES2217534	0.02	1	0.22	1.22	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.33
SW019	TC12	27/05/2022	0908_SW019_220527	Normal	ES2219412	0.02	0.33	0.3	0.63	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.75
SW023	TC6A	17/05/2022	0908_SW023_220517	Normal	ES2217534	0.02	0.32	0.3	0.62	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.75
SW024	TC7	16/05/2022	0908_SW024_220516	Normal	ES2217534	0.01	0.24	0.23	0.47	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.55
SW047	BD03	19/05/2022	0908_SW047_220519	Normal	ES2217534	0.11	5.34	0.87	6.21	<0.05	0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.06	<0.02	0.19	0.06	0.05	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	6.82
SW048	BD04	19/05/2022	0908_SW048_220519	Normal	ES2217534	0.08	0.44	1.22	1.66	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	0.04	<0.02	0.23	0.08	0.05	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.35
SW055	DD1	19/05/2022	0908_QC111_220519	Field_D	ES2217534	0.08	3.98	0.96	4.94	<0.05	0.07	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.08	<0.02	0.23	0.06	0.05	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	5.64
SW055	DD1	19/05/2022	0908_SW055_220519	Normal	ES2217534	0.08	3.81	1.01	4.82	<0.05	0.07	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.06	<0.02	0.23	0.06	0.05	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	5.5
SW059	DD2	17/05/2022	0908_QC203_220517	Interlab_D	297361	0.05	0.72	0.75	1.5	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	0.06	0.03	<0.01	0.13	0.06	0.03	<0.02	<0.05	<0.02	0.05	0.03	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	1.9
SW059	DD2	17/05/2022	0908_QC103_220517	Field_D	ES2217534	0.04	0.8	0.73	1.53	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.03	<0.02	0.15	0.05	0.02	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.94
SW059	DD2	17/05/2022	0908_SW059_220517	Normal	ES2217534	0.04	0.76	0.74	1.5	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.03	<0.02	0.15	0.05	0.03	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.92
SW060	DD3	18/05/2022	0908_SW060_220518	Normal	ES2217534	0.31	7.21	3.9	11.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.5	0.18	<0.02	1.04	0.35	0.15	<0.02	<0.02	<0.02	0.35	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	14.1
SW062	DD5	16/05/2022	0908_SW062_220516	Normal	ES2217534	<0.01	0.12	0.22	0.34	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.41
SW079	TC2	16/05/2022	0908_SW079_220516	Normal	ES2217534	0.01	0.4	0.37	0.77	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.93
SW081	TFD1	16/05/2022	0908_SW081_220516	Normal	ES2217534	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01
SW108	LC	19/05/2022	0908_QC110_220519	Field_D	ES2217534	0.08	6.98	0.79	7.77	<0.05	0.1	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.07	<0.02	0.2	0.06	0.04	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	8.41
SW108	LC	19/05/2022	0908_SW108_220519	Normal	ES2217534	0.09	7.71	0.89	8.6	<0.05	0.11	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.07	<0.02	0.22	0.07	0.05	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	9.3
SW110	LC_B	19/05/2022	0908_SW110_220519	Normal	ES2217534	0.08	5.33	0.86	6.19	<0.05	0.09	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.08	<0.02	0.22	0.06	0.05	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	6.86
SW259	FCD4	27/05/2022	0908_SW259_220527	Normal	ES2219409	0.04	0.85	0.43	1.28	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.02	<0.02	0.1	0.03	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.54

Notes  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first time detection above LOR  
 Denotes new exceedence of human health and/or ecological screening criteria

Table T7 - Sediment Analytical Results

					Per- and Poly-fluoroalkyl Substances																															
Location Code	Alt. Name	Sampled Date	Field ID	Sample Type	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS		
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
LOR					0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002
SD001	MD1	18/05/2022	0908_SD001_220518	Normal	<0.0002	0.0014	0.0002	0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0016
SD005	MD5	18/05/2022	0908_SD005_220518	Normal	<0.0002	0.001	<0.0002	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.001
SD006	MD6	18/05/2022	0908_SD006_220518	Normal	<0.0002	0.0296	0.001	0.0306	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0308
SD007	MD7	18/05/2022	0908_SD007_220518	Normal	<0.0002	0.005	0.0006	0.0056	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0056
SD009	MD8	17/05/2022	0908_QC205_220517	Interlab_D	0.0001	0.035	0.0013	0.036	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	<0.0001	<0.0002	<0.0001	<0.0001	0.0003	<0.0001	0.001	<0.0005	<0.0005	<0.0001	<0.0002	<0.001	<0.005	<0.001	<0.001	<0.001	<0.0002	0.002	<0.0004	0.039	
SD009	MD8	17/05/2022	0908_QC105_220517	Field_D	<0.0002	0.0194	0.0016	0.021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0013	<0.0002	0.0226	
SD009	MD8	17/05/2022	0908_SD009_220517	Normal	<0.0002	0.0077	0.0004	0.0081	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0004	<0.0002	0.0085	
SD014	MD14	16/05/2022	0908_SD014_220516	Normal	<0.0002	0.0039	0.0002	0.0041	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0003	<0.0002	0.0044	
SD019	TC12	27/05/2022	0908_SD019_220527	Normal	<0.0002	0.0125	0.0007	0.0132	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0132	
SD023	TC6A	17/05/2022	0908_SD023_220517	Normal	<0.0002	0.0008	<0.0002	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	
SD024	TC7	16/05/2022	0908_SD024_220516	Normal	<0.0002	0.0031	0.0012	0.0043	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0043	
SD047	BD03	19/05/2022	0908_SD047_220519	Normal	<0.0002	0.0016	0.0002	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0018	
SD048	BD04	19/05/2022	0908_SD048_220519	Normal	<0.0002	0.0033	0.0014	0.0047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0058	
SD055	DD1	19/05/2022	0908_QC209_220519	Interlab_D	<0.0001	0.01	0.0006	0.011	<0.0001	0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.005	<0.0001	<0.0002	<0.0001	0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.005	<0.001	<0.001	<0.001	<0.0002	<0.0002	0.011	
SD055	DD1	19/05/2022	0908_SD055_220519	Normal	<0.0002	0.0092	0.0007	0.0099	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0099	
SD059	DD2	17/05/2022	0908_SD059_220517	Normal	<0.0002	0.0026	<0.0002	0.0026	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0026	
SD060	DD3	18/05/2022	0908_SD060_220518	Normal	0.0014	0.226	0.0217	0.248	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.002	0.0007	<0.0002	0.0033	0.0048	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.262	
SD062	DD5	16/05/2022	0908_SD062_220516	Normal	<0.0002	0.0004	0.0004	0.0008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0008	
SD079	TC2	16/05/2022	0908_SD079_220516	Normal	<0.0002	0.0038	0.0006	0.0044	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0044	
SD081	TFD1	16/05/2022	0908_SD081_220516	Normal	<0.0002	0.0178	0.0051	0.0229	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0006 <sup>#1</sup>	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0006 <sup>#1</sup>	<0.0006 <sup>#1</sup>	<0.0006 <sup>#1</sup>	<0.0006 <sup>#1</sup>	<0.0002	<0.0002	<0.0002	0.0229	
SD108	LC	19/05/2022	0908_QC109_220519	Field_D	<0.0002	0.0879	0.0043	0.0922	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0066	<0.0002	0.103		
SD108	LC	19/05/2022	0908_SD108_220519	Normal	<0.0002	0.0377	0.0016	0.0393	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005					

Table T8 - Soil Analytical Results

	Per- and Poly-fluoroalkyl Substances																													
	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTaDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluorooheptane sulfonic acid (PFHpS)	Perfluorooheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	Sum of PFAS
LOR	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002
PFAS NEMP 2020 Ecological direct exposure	10	1																												
PFAS NEMP 2020 Ecological indirect exposure		0.01																												
PFAS NEMP 2020 Public open space (HIL C)	10			1																										

Location Code	Alt. Name	Sampled Date	Field ID	Sample Type	Lab Report #	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTaDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluorooheptane sulfonic acid (PFHpS)	Perfluorooheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	Sum of PFAS	
SS101	SS001, SS01	16/05/2022	0908 SS101 220516	Normal	ES2217535	<0.0002	0.0023	0.0002	0.0025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0025
SS102	SS002, SS02	16/05/2022	0908 QC101 220516	Field D	ES2217535	0.0002	0.0132	0.0007	0.0139	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0149
SS102	SS002, SS02	16/05/2022	0908 SS102 220516	Normal	ES2217535	0.0002	0.0149	0.0008	0.0157	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0165
SS103	SS003, SS03	16/05/2022	0908 SS103 220516	Normal	ES2217535	<0.0002	0.001	<0.0002	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.001
SS104	SS004, SS04	16/05/2022	0908 SS104 220516	Normal	ES2217535	<0.0002	0.0004	<0.0002	0.0004	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0004
SS105	SS005, SS05	16/05/2022	0908 SS105 220516	Normal	ES2217535	<0.0002	0.0006	<0.0002	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0006
SS106	SS006, SS06	16/05/2022	0908 SS106 220516	Normal	ES2217535	<0.0002	0.0017	0.0003	0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.002
SS107	SS007, SS07	18/05/2022	0908 SS107 220518	Normal	ES2217535	<0.0002	0.0299	0.0002	0.0301	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0301
SS108	SS008, SS08	17/05/2022	0908 SS108 220517	Normal	ES2217535	<0.0002	0.0043	0.0009	0.0052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.007
SS109	SS009, SS09	27/05/2022	0908 QC211 220527	Interlab D	297361	<0.0001	0.0008	<0.0001	0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0008
SS109	SS009, SS09	27/05/2022	0908 SS109 220527	Normal	ES2219408	<0.0002	0.0012	<0.0002	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0012
SS110	SS010, SS10	16/05/2022	0908 SS110 220516	Normal	ES2217535	<0.0002	0.0294	0.0006	0.03	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0309
SS111	SS011, SS11	16/05/2022	0908 SS111 220516	Normal	ES2217535	<0.0002	0.0002	<0.0002	0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0002
SS112	SS012, SS12	16/05/2022	0908 SS112 220516	Normal	ES2217535	<0.0002	0.0021	<0.0002	0.0021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0021

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first time detection above LOR  
 Denotes new exceedence of human health and/or ecological screening criteria





Table T9 - Historical Groundwater Analytical Results



PFAS	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	Sum of PFAS		
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	Sum of PFAS			
MW108D	MW108_D	4/04/2018	MW108D_GW_04042018	Normal	NSW_0908_PFAAS	-	-	-	0.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW108D	MW108_D	29/11/2018	0908_MW108D_181129	Normal	NSW_0908_PFAAS	<0.01	<0.01	0.37	0.37	0.02	0.03	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.46	
MW108D	MW108_D	29/11/2018	0908_MW108D_181129	Normal	NSW_0908_PFAAS	-	-	-	0.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW108D	MW108_D	31/05/2019	0908_MW108D_190531	Normal	NSW_0908_PFAAS	<0.01	<0.01	0.38	0.38	0.05	0.04	<0.02	-	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.54	
MW108D	MW108_D	31/05/2019	0908_MW108D_190531	Normal	NSW_0908_PFAAS	-	-	-	0.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW108D	MW108_D	31/05/2019	0908_QC105_190531	Field_D	NSW_0908_PFAAS	<0.01	<0.01	0.37	0.37	0.04	0.04	<0.02	-	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.51	
MW108D	MW108_D	31/05/2019	0908_QC105_190531	Field_D	NSW_0908_PFAAS	-	-	-	0.38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW108D	MW108_D	31/05/2019	0908_QC205_190531	Interlab_D	NSW_0908_PFAAS	<0.01	<0.02	0.36	0.38	0.046	0.041	<0.01	<0.01	<0.01	<0.05	<0.02	0.059	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	-	
MW108D	MW108_D	8/11/2019	0908_MW108D_191108	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.46	0.46	0.08	0.08	<0.02	-	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.76
MW108D	MW108_D	11/05/2020	0908_MW108D_200511	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.44	0.44	0.10	0.11	<0.02	-	<0.02	<0.1	0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.80	
MW108D	MW108_D	17/11/2020	0908_MW108D_201117	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.23	0.23	0.04	0.04	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.35	
MW108D	MW108_D	17/05/2021	0908_MW108D_210517	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.55	0.55	0.07	0.10	<0.02	-	<0.02	<0.1	0.02	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.86	
MW108D	MW108_D	10/11/2021	0908_MW108D_211110	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	1.41	1.41	0.21	0.20	<0.02	-	<0.02	<0.1	0.05	0.33	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.25	
MW108D	MW108_D	19/05/2022	0908_MW108D_220519	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.21	0.21	<0.02	0.03	<0.02	-	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.26	
MW108S	MW108_S	17/11/2014	MW108-S_17112014	Normal	NSW_0908_PFAAS	<0.01	0.02	0.21	0.23	<0.01	-	-	-	<0.01	-	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
MW108S	MW108_S	21/01/2016	MW108S_21012016	Normal	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW108S	MW108_S	29/08/2016	MW108S_290816	Normal	NSW_0908_PFAAS	0.02	0.13	1.9	2.03	0.07	-	-	-	<0.01	<0.05	0.04	0.46	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW108S	MW108_S	17/10/2016	MW108S_171016	Normal	NSW_0908_PFAAS	0.02	0.2	2.4	2.6	0.07	-	-	-	<0.01	<0.05	0.02	0.12	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW108S	MW108_S	13/01/2017	MW108S_130117	Normal	ACTNSW_Hist_202012-3	0.02	0.38	0.78	-	0.03	-	-	-	<0.01	<0.05	0.01	0.18	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW108S	MW108_S	24/01/2017	MW108S_GW_24012017	Normal	NSW_0908_PFAAS	0.01	0.46	0.99	1.45	0.03	0.11	<0.02	-	<0.02	<0.1	<0.02	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.75	
MW108S	MW108_S	2/05/2017	MW108S_020517	Normal	ACTNSW_Hist_202012-3	0.02	0.11	0.82	-	0.02	0.03	<0.01	-	<0.01	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW108S	MW108_S	4/04/2018	MW108S_GW_04042018	Normal	NSW_0908_PFAAS	<0.01	0.02	0.25	0.27	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	
MW108S	MW108_S	9/08/2018	0908_MW108S_180809	Normal	NSW_0908_PFAASMGMT	0.32	0.06	2.97	3.03	0.07	0.16	<0.02	-	<0.02	<0.1	0.05	0.38	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.05	
MW108S	MW108_S	5/09/2018	0908_MW108S_180905	Normal	NSW_0908_PFAASMGMT	0.35	0.09	3.22	3.31	0.07	0.15	<0.02	-	<0.02	<0.1	0.03	0.39	0.05																					











Table T9 - Historical Groundwater Analytical Results



PFAS	PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides														
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	Sum of PFAS		
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSE)	Sum of PFAS			
MW134D	MW134_D	25/01/2017	MW134D_GW_25012017	Normal	NSW_0908_PFAS	<0.01	0.17	0.1	0.27	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.27		
MW134D	MW134_D	9/05/2017	MW134D_090517	Normal	ACTNSW_Hist_202012-3	<0.01	0.05	0.02	-	<0.01	<0.01	0.01	-	<0.01	<0.05	<0.01	<0.01	<0.01	0.02	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.03	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	
MW134D	MW134_D	19/04/2018	MW134D_GW_19042018	Normal	NSW_0908_PFAS	<0.01	0.08	0.06	0.14	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11
MW134D	MW134_D	30/11/2018	0908_MW134D_181130	Normal	NSW_0908_PFAS	<0.01	0.04	0.04	0.11	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
MW134D	MW134_D	29/05/2019	0908_MW134D_190529	Normal	NSW_0908_PFAS	<0.01	0.06	0.04	0.1	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
MW134D	MW134_D	6/11/2019	0908_MW134D_191107	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02
MW134D	MW134_D	15/05/2020	0908_MW134D_200515	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02
MW134D	MW134_D	7/12/2020	0908_MW134_D_201207	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.03	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.03
MW134D	MW134_D	24/05/2021	0908_MW134D_210524	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.04	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04
MW134D	MW134_D	18/11/2021	0908_MW134D_211118	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.02	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.03
MW134D	MW134_D	30/05/2022	0908_MW134D_220530	Normal	NSW_0908_PFASOMP	<0.01	0.02	0.03	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
MW134I	MW134_I	13/04/2015	MW134-I_20150413	Normal	NSW_0908_PFAS	0.01	<0.01	0.04	0.04	<0.01	-	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.05	0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-		
MW134I	MW134_I	4/02/2016	MW134I_04022016	Normal	NSW_0908_PFAS	<0.01	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-		
MW134I	MW134_I	5/09/2016	MW134I_050916	Normal	NSW_0908_PFAS	<0.01	0.21	0.03	0.24	<0.01	-	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW134I	MW134_I	19/10/2016	MW134I_191016	Normal	NSW_0908_PFAS	<0.01	0.13	0.03	0.16	<0.01	-	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW134I	MW134_I	25/01/2017	MW134I_GW_25012017	Normal	NSW_0908_PFAS	<0.01	0.07	0.03	0.1	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	
MW134I	MW134_I	9/05/2017	MW134I_090517	Normal	ACTNSW_Hist_202012-3	<0.01	0.06	0.02	-	<0.01	<0.01	<0.01	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	
MW134I	MW134_I	19/04/2018	MW134I_GW_19042018	Normal	NSW_0908_PFAS	<0.01	<0.01	0.08	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
MW134I	MW134_I	19/04/2018	MW134I_GW_19042018	Normal	NSW_0908_PFAS	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW134I	MW134_I	30/11/2018	0908_MW134I_181130	Normal	NSW_0908_PFAS	<0.01	0.03	0.05	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08
MW134I	MW134_I	29/05/2019	0908_MW134I_190529	Normal	NSW_0908_PFAS	<0.01	0.02	0.03	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
MW134I	MW134_I	6/11/2019	0908_MW134I_191107	Normal	NSW_0908_PFASOMP	<0.01	0.02	0.03	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<					





Table T9 - Historical Groundwater Analytical Results



	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	Sum of PFAS		
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSE)	Sum of PFAS		
MW159D	MW159_D	1/06/2022	0908_MW159D_220601	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW159S	MW159_S	9/02/2016	MW159_09022016	Normal	NSW_0908_PFAS	<0.01	0.03	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	
MW159S	MW159_S	9/02/2016	QC131_WG_09022016	Field_D	NSW_0908_PFAS	<0.01	0.02	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	
MW159S	MW159_S	31/01/2017	MW159_GW_31012017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	27/04/2018	MW159S_GW_27042018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	21/11/2018	0908_MW159S_181121	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	23/05/2019	0908_MW159S_190523	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	14/05/2020	0908_MW159S_200514	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	19/05/2021	0908_MW159S_210519	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW159S	MW159_S	1/06/2022	0908_MW159S_220601	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	7/03/2016	MW160_07032016	Normal	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	
MW160	MW160	30/01/2017	MW160_GW_30012017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	27/04/2018	MW160_GW_27042018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	21/11/2018	0908_MW160_181121	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	6/11/2019	0908_MW160_191106	Normal	NSW_0908_PFASOMP	0.02	3.11	0.19	3.30	<0.02	<0.02	0.04	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	3.39
MW160	MW160	14/05/2020	0908_MW160_200514	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	17/11/2020	0908_MW160_210117	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
MW160	MW160	24/05/2021	0908_MW160_210524	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.03	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
MW160	MW160	15/11/2021	0908_MW160_211115	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.02	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
MW160	MW160	15/11/2021	0908_QC206_211115	Interlab_D	NSW_0908_PFASOMP	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
MW160	MW160	31/05/2022	0908_MW160_220531	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
MW160	MW160	31/05/2022	0908_QC119_220531	Field_D	NSW_0908_PFASOMP	<0.01	0.01	0.04	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
MW161D	MW161_D	26/02/2																																				





















Table T9 - Historical Groundwater Analytical Results



PFAS	PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides													
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononane sulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-ethyl perfluorooctane sulfonamide (EtFOSE)	N-ethyl perfluorooctane sulfonamide (EtFOSE)	N-ethyl perfluorooctane sulfonamide (EtFOSE)	Sum of PFAS	
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW201S	MW201_S	18/01/2017	MW201S_GW_18012017	Normal	NSW_0908_PFAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW201S	MW201_S	5/05/2017	MW201S_050517	Normal	ACTNSW_Hist_202012-3	0.1	6.6	1	17.4	0.05	0.08	0.18	-	-	0.05	0.18	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW201S	MW201_S	29/05/2019	0908_MW201S_190529	Normal	NSW_0908_PFAS	0.12	4	1.96	5.96	0.09	0.15	0.12	-	-	0.08	0.26	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	6.82		
MW201S	MW201_S	22/05/2020	0908_MW201S_200522	Normal	NSW_0908_PFASOMP	0.35	17.4	7.46	24.9	0.15	0.28	0.34	-	-	0.1	0.24	0.93	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	27.4		
MW201S	MW201_S	19/05/2021	0908_MW201S_210519	Normal	NSW_0908_PFASOMP	0.03	1.49	0.46	1.95	0.03	0.03	0.03	-	-	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2.15		
MW201S	MW201_S	30/05/2022	0908_MW201S_220530	Normal	NSW_0908_PFASOMP	0.02	1.76	0.82	2.58	<0.02	0.03	<0.02	-	-	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2.71		
MW202D	MW202_D	20/01/2016	MW202D_20012016	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW202D	MW202_D	31/08/2016	MW202D_310816	Normal	NSW_0908_PFAS	<0.01	<0.01	0.04	0.04	0.02	-	-	-	-	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-		
MW202D	MW202_D	18/10/2016	MW202D_181016	Normal	NSW_0908_PFAS	<0.01	0.01	0.03	0.04	<0.01	-	-	-	-	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
MW202D	MW202_D	18/01/2017	MW202D_180117	Normal	ACTNSW_Hist_202012-3	<0.01	0.03	0.03	-	0.01	-	-	-	-	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
MW202D	MW202_D	18/01/2017	MW202D_GW_18012017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW202D	MW202_D	5/05/2017	MW202D_050517	Normal	ACTNSW_Hist_202012-3	<0.01	0.04	0.08	-	0.02	0.02	<0.01	-	-	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
MW202D	MW202_D	4/04/2018	MW202D_GW_04042018	Normal	NSW_0908_PFAS	<0.01	0.07	0.07	0.14	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.14	
MW202D	MW202_D	4/04/2018	QC102_GW_04042018	Field_D	NSW_0908_PFAS	<0.01	0.08	0.05	0.13	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.15	
MW202D	MW202_D	4/04/2018	QC102_GW_04042018	Interlab_D	NSW_0908_PFAS	<0.01	0.06	0.044	0.104	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
MW202D	MW202_D	22/11/2018	0908_MW202D_181122	Normal	NSW_0908_PFAS	<0.01	0.02	<0.02	0.02	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	
MW202D	MW202_D	22/11/2020	0908_MW202D_201117	Normal	NSW_0908_PFAS	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW202D	MW202_D	30/05/2019	0908_MW202D_190530	Normal	NSW_0908_PFAS	<0.01	0.02	<0.02	0.02	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	
MW202D	MW202_D	30/05/2019	0908_MW202D_190530	Normal	NSW_0908_PFAS	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW202D	MW202_D	8/11/2019	0908_MW202D_191108	Normal	NSW_0908_PFASOMP	0.02	0.05	0.80	0.85	0.09	0.10	<0.02	-	-	<0.02	<0.1	0.04	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.28		
MW202D	MW202_D	29/05/2020	0908_MW202D_200529	Normal	NSW_0908_PFASOMP	<0.01	0.07	0.11	0.18	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.22		
MW202D	MW202_D	17/11/2020	0908_MW202D_201117	Normal	NSW_0908_PFASOMP	0.01	0.18	0.48	0.66	0.05	0.06	0.02	-	-	<0.02	<0.1	0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.94	
MW202D	MW202_D	17/05/2021	0908_MW202D_210517	Normal	NSW_0908_PFASOMP	<0.01	0.04	<0.02	0.04	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	
MW202D	MW202_D	10/11/2021	0908_MW202D_211110	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.03	0.07	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07	
MW202D	MW202_D	19/05/2022	0908_MW202D_220519	Normal	NSW_0908_PFASOMP	<0.01	0.12	0.10	0.22	<0.02	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.24	
MW202D	MW202_D	19/05/2022	0908_QC212_220519	Interlab_D	NSW_0908_PFASOMP	<0.01	0.11	0.05	0.16	<0.01	<0.01	<0.01	-	-	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<														













Table T9 - Historical Groundwater Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS			
MW247D	MW247_D	30/11/2018	0908_MW247D_181130	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	
MW247D	MW247_D	31/05/2019	0908_MW247D_190531	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01	
MW247D	MW247_D	6/11/2019	0908_MW247D_191106	Normal	NSW_0908_PFASOMP	<0.01	0.03	<0.02	0.03	<0.02	<0.02	<0.02	-	0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.05
MW247D	MW247_D	15/05/2020	0908_MW247D_200515	Normal	NSW_0908_PFASOMP	<0.01	0.01	<0.02	0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.01
MW247D	MW247_D	24/11/2020	0908_MW247_D_201124	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.01
MW247D	MW247_D	18/05/2021	0908_MW247D_210518	Normal	NSW_0908_PFASOMP	<0.01	0.05	<0.02	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.05
MW247D	MW247_D	12/11/2021	0908_MW247D_211112	Normal	NSW_0908_PFASOMP	<0.01	0.05	0.01	0.06	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.06
MW247D	MW247_D	12/11/2021	0908_QC106_211112	Field_D	NSW_0908_PFASOMP	<0.01	0.05	0.01	0.06	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.06
MW247D	MW247_D	18/05/2022	0908_MW247D_220518	Normal	NSW_0908_PFASOMP	<0.01	0.06	0.02	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.08
MW247S	MW247_S	1/02/2017	MW247S_GW_01022017	Normal	NSW_0908_PFAS	0.03	0.21	0.76	0.97	<0.02	0.09	<0.02	-	<0.02	<0.1	<0.02	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.43	
MW247S	MW247_S	1/02/2017	QC821_GW_01022017	Interlab_D	NSW_0908_PFAS	0.037	0.19	1.1	1.29	0.057	-	-	-	<0.02	<0.05	0.042	0.14	0.029	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	-	<0.02	-	-	-	-	-	-	-	-			
MW247S	MW247_S	28/02/2017	MW247S_GW_280217	Normal	NSW_0908_PFAS	0.09	0.27	1.21	1.48	0.09	0.09	0.06	-	<0.02	<0.1	0.06	0.2	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.1	
MW247S	MW247_S	12/04/2018	MW247S_GW_12042018	Normal	NSW_0908_PFAS	0.06	1.24	0.5	1.74	<0.02	0.03	0.06	-	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	0.06	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.12	
MW247S	MW247_S	30/11/2018	0908_MW247S_181130	Normal	NSW_0908_PFAS	0.02	0.48	0.61	1.09	0.06	0.07	0.02	-	<0.02	<0.1	0.04	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.48
MW247S	MW247_S	31/05/2019	0908_MW247S_190531	Normal	NSW_0908_PFAS	0.02	1.88	0.29	2.17	<0.02	0.02	0.04	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.29	
MW247S	MW247_S	6/11/2019	0908_MW247S_191106	Normal	NSW_0908_PFASOMP	0.02	1.35	0.44	1.79	0.04	0.02	0.03	-	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.04	
MW247S	MW247_S	15/05/2020	0908_MW247S_200515	Normal	NSW_0908_PFASOMP	0.02	1.93	0.38	2.31	<0.02	<0.02	0.02	-	<0.02	<0.1	0.05	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.46	
MW247S	MW247_S	24/11/2020	0908_MW247_S_201124	Normal	NSW_0908_PFASOMP	0.02	0.93	0.10	1.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.05	
MW247S	MW247_S	18/05/2021	0908_MW247S_210518	Normal	NSW_0908_PFASOMP	0.02	0.55	1.75	2.30	0.09	0.22	<0.02	-	<0.02	<0.1	0.03	0.27	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	3.01	
MW247S	MW247_S	12/11/2021	0908_MW247S_211112	Normal	NSW_0908_PFASOMP	0.04	0.96	1.09	2.05	0.07	0.09	0.03	-	<0.02	<0.1	0.03	0.15	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.50	
MW247S	MW247_S	18/05/2022	0908_MW247S_220518	Normal	NSW_0908_PFASOMP	0.02	0.33	0.70	1.03	0.04	0.05	0.02	-	<0.02	<0.1	0.04	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.33	
MW255D	MW255_D	1/03/2017	MW255D_GW_010317	Normal	NSW_0908_PFAS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	0.05		
MW255D	MW255_D	29/03/2018	MW255D_GW_29032018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	&







Table T9 - Historical Groundwater Analytical Results



	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
MW271S	MW271_S	8/11/2019	0908_MW271S_191108	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.05
MW271S	MW271_S	26/05/2020	0908_MW271S_200526	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.08	0.08	0.04	0.02	<0.02	-	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.23
MW271S	MW271_S	13/11/2020	0908_MW271_S_201113	Normal	NSW_0908_PFASOMP	<0.01	<0.01	0.03	0.03	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.07
MW271S	MW271_S	12/11/2021	0908_MW271S_211112	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.01	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.02
MW271S	MW271_S	16/05/2022	0908_MW271S_220516	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.02	0.03	0.03	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	0.06
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.1 PFOA	Normal	NSW_0908_PFAS	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.3 PFOS	Normal	NSW_0908_PFAS	-	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.3 PFOA	Normal	NSW_0908_PFAS	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.3 PFOA	Normal	NSW_0908_PFAS	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.3 PFOS	Normal	NSW_0908_PFAS	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.10.3 PFOS	Normal	NSW_0908_PFAS	-	0.12	-	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.11 PFOA	Normal	NSW_0908_PFAS	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.11 PFOS	Normal	NSW_0908_PFAS	-	0.46	-	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.13 PFOA	Normal	NSW_0908_PFAS	1.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.13 PFOS	Normal	NSW_0908_PFAS	-	1.57	-	1.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.110 PFOA	Normal	NSW_0908_PFAS	5.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.110 PFOS	Normal	NSW_0908_PFAS	-	5.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.130 PFOA	Normal	NSW_0908_PFAS	36.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.130 PFOS	Normal	NSW_0908_PFAS	-	18	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.1100 UG/L PFOA	Normal	NSW_0908_PFAS	113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	20/02/2017	MW279D_LT_2.7-5.1100 UG/L PFOS	Normal	NSW_0908_PFAS	-	70.3	-	70.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW279S	MW279_S	6/03/2017	MW279S_GW_060317	Normal	NSW_0908_PFAS	0.01	0.05	1.17	1.22	0.06	0.11	<0.02	-	<0.02	<0.1	0.02	0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	1.71
MW279S	MW279_S	13/04/2018	MW279S_GW_13042018	Normal	NSW_0908_PFAS	0.04	0.24	1.43	1.67	0.04	0.12	<0.02	-	<0.02	<0.1	0.04	0.55	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	2.46
MW279S	MW279_S	26/11/2018	0908_MW279S_181126	Normal	NSW_0908_PFAS	0.02	0.11	1.56	1.67	0.06	0.09	<0.02	-	<0.02	<0.1	<0.02	0.3	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	2.16
MW279S	MW279_S	27/05/2019	0908_MW279S_190527	Normal	NSW_0908_PFAS	0.02	0.2	1.25	1.45	0.05	0.1	<0.02	-	<0.02	<0.1	0.03	0.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	1.95
MW279S	MW279_S	8/11/2019	0908_MW279S_191108	Normal	NSW_0908_PFASOMP	0.04	0.18	2.16	2.34	0.08	0.15	<0.02	-	<0.02	<0.1	0.06	0.56	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	3.26
MW279S	MW279_S	18/05/2020	0908_MW279S_200518	Normal	NSW_0908_PFASOMP	0.04	0.45	2.63	3.08	0.08	0.18	0.04	-	<0.02	<0.1	<0.02	0.39	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	3.84
MW279S	MW279_S	25/11/2020	0908_MW279_S_201125	Normal	NSW_0908_PFASOMP	0.02	0.35	1.20	1.55	0.05	0.08	0.02	-	<0.02	<0.1	<0.02	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	2.00
MW279S	MW279_S	20/05/2021	0908_MW279S_210520	Normal	NSW_0908_PFASOMP	0.03	0.72	1.95	2.67	0.12	0.15	0.04	-	<0.02	<0.1	0.05	0.52	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	3.60
MW279S	MW279_S	11/11/2021	0908_MW279S_211111	Normal	NSW_0908_PFASOMP	0.01	0.46	0.93	1.39	0.05	0.05	<0.02	-	<0.02	<0.1	<0.02	0.22	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0			







Table T9 - Historical Groundwater Analytical Results



	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-ethyl perfluorooctane sulfonamide (EFOSE)	N-ethyl perfluorooctane sulfonamide (EFOSE)	Sum of PFAS	
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0002
PFAS NEMP 2020 Drinking Water	0.56			0.07																											
PFAS NEMP 2020 Freshwater 99%	19	0.00023																													

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-ethyl perfluorooctane sulfonamide (EFOSE)	N-ethyl perfluorooctane sulfonamide (EFOSE)	Sum of PFAS				
MW433	W33	24/08/2016	W33_240816	Normal	NSW_0908_PFAS	<0.01	0.02	0.02	0.04	<0.01	-	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-		
MW433	W33	17/10/2016	W33_171016	Normal	NSW_0908_PFAS	<0.01	0.06	0.05	0.11	<0.01	-	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-			
MW433	W33	12/01/2017	W33_GW_12012017	Normal	NSW_0908_PFAS	<0.01	0.04	<0.02	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	
MW433	W33	13/01/2017	W33_130117	Normal	ACTNSW_Hist_202012-3	<0.01	0.04	0.04	-	<0.01	-	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-		
MW433	W33	3/05/2017	W33_030517	Normal	ACTNSW_Hist_202012-3	<0.01	0.07	0.05	-	<0.01	<0.01	<0.01	-	<0.01	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	
MW433	W33	3/04/2018	W33_GW_03042018	Normal	NSW_0908_PFAS	<0.01	0.03	0.04	0.07	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	
MW433	W33	28/06/2018	0908_W33_180628	Normal	NSW_0908_Stage2	<0.01	0.02	0.09	0.11	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	
MW433	W33	21/11/2018	0908_W33_181121	Normal	NSW_0908_PFAS	0.02	0.05	0.11	0.16	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	
MW433	W33	27/05/2019	0908_W33_190527	Normal	NSW_0908_PFAS	0.02	0.1	0.18	0.28	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.3	
MW433	W33	6/11/2019	0908_MW433_191106	Normal	NSW_0908_PFASOMP	0.01	0.05	0.16	0.21	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.22	
MW433	W33	12/05/2020	0908_MW433_200512	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.09	0.12	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12	
MW433	W33	17/11/2020	0908_MW433_201117	Normal	NSW_0908_PFASOMP	<0.01	0.02	0.02	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.04	
MW433	W33	17/05/2021	0908_MW433_210517	Normal	NSW_0908_PFASOMP	0.01	0.16	0.10	0.26	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	
MW433	W33	8/11/2021	0908_MW433_211108	Normal	NSW_0908_PFASOMP	<0.01	0.05	0.05	0.10	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.10
MW433	W33	24/05/2022	0908_MW433_220524	Normal	NSW_0908_PFASOMP	0.02	0.06	0.03	0.09	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	
MW466	W66	18/06/2014	W66	Normal	ACTNSW_Hist_202012-3	1.4	29.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-		
MW466	W66	11/08/2014	W66_11082014	Normal	NSW_0908_PFAS	0.69	<0.01	0.03	13.03	3.9	-	-	-	<0.01	-	0.61	6.7	0.03	0.03	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-		
MW466	W66	11/08/2014	W66_11082014	Normal	NSW_0908_PFAS	-	13	-	-	-	-	-	-	-	-	-	1.7	13	-	0.03	0.03	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-		
MW466	W66	29/08/2016	QC104_2908016	Field_D	ACTNSW_Hist_202012-3	1.33	31.8	10.5	42.3	1	1.13	1.07	-	<0.02	0.4	1.01	3.12	0.51	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	51.9		
MW466	W66	29/08/2016	W66_290816	Normal	NSW_0908_PFAS	0.77	26	7.3	33.3	0.57	-	-	-	<0.01	0.1	0.3	1.9	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-		
MW466	W66	19/10/2016	W66_191016	Normal	NSW_0908_PFAS	0.58	33	5.9	38.9	0.41	-	-	-	<0.01	0.14	0.15	1.1	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	-		
MW466	W66	20/12/2016	QC800_GW_201216	Interlab_D	NSW_0908_PFAS	0.4	31	2.3	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-		
MW466	W66	20/12/2016	W66_GW_20122016	Normal	NSW_0908_PFAS	0.5	32	3.24	35.2	0.17	0.22	0.4	-	<0.02	<0.1	0.2	0.84	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	37.7		
MW466	W66	20/12/2016	W66_GW_20122016	Normal	NSW_0908_PFAS	-	-	-	35.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW466	W66	12/01/2017																																					





Table T9 - Historical Groundwater Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSA-A)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSA-A)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
LOR	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.001	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSA-A)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSA-A)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS		
POT085	BWS085	6/12/2016	BWS085_061216	Normal	NSW_0908_PFAS	0.02	0.03	<0.02	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	
POT085	BWS085	18/06/2019	0908_BWS085_190618	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
POT085	BWS085	28/05/2020	0908_POT085_200528	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
POT085	BWS085	19/11/2021	0908_POT085_211119	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01
POT085	BWS085	16/05/2022	0908_POT085_220516	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01	
POT087	BWS087	27/10/2015	BWS87_271015	Normal	NSW_0908_PFAS	<0.02	0.7	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-		
POT087	BWS087	6/12/2016	BWS087_061216	Normal	NSW_0908_PFAS	<0.01	1.15	<0.02	1.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	-	-	-	-	-	-	-	-	-	-	
POT087	BWS087	14/06/2019	0908_BWS087_190614	Normal	NSW_0908_PFAS	<0.01	0.4	0.09	0.49	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.49
POT087	BWS087	8/11/2019	0908_POT087_191108	Normal	NSW_0908_PFASOMP	<0.01	0.44	0.09	0.53	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.53
POT087	BWS087	26/05/2020	0908_POT087_200526	Normal	NSW_0908_PFASOMP	<0.01	0.48	0.08	0.56	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.56
POT087	BWS087	10/05/2021	0908_POT087_210510	Normal	NSW_0908_PFASOMP	<0.01	0.17	0.12	0.29	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.29
POT087	BWS087	27/05/2022	0908_POT087_220527	Normal	NSW_0908_PFASOMP	<0.01	0.26	0.09	0.35	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.35
POT089	BWS089	27/10/2015	BWS89_271015	Normal	NSW_0908_PFAS	<0.02	0.16	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	
POT089	BWS089	6/12/2016	BWS089_061216	Normal	NSW_0908_PFAS	<0.01	0.27	0.19	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	
POT089	BWS089	14/06/2019	0908_BWS089_190614	Normal	NSW_0908_PFAS	<0.01	0.17	0.2	0.37	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.41
POT089	BWS089	7/11/2019	0908_POT089_191107	Normal	NSW_0908_PFASOMP	<0.01	0.23	0.23	0.46	<0.02	0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.52
POT089	BWS089	26/05/2020	0908_POT089_200526	Normal	NSW_0908_PFASOMP	<0.01	0.24	0.28	0.52	0.02	0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.60
POT089	BWS089	10/05/2021	0908_POT089_210510	Normal	NSW_0908_PFASOMP	<0.01	0.18	0.26	0.44	<0.02	0.03	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.52
POT089	BWS089	27/05/2022	0908_POT089_220527	Normal	NSW_0908_PFASOMP	0.01	0.33	0.26	0.59	0.02	0.02	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.69
POT107	BWS107	29/10/2015	BWS107_291015	Normal	NSW_0908_PFAS	<0.02	0.02	-	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	
POT107	BWS107	29/11/2016	BWS107_291116	Normal	NSW_0908_PFAS	<0.01	0.05	0.26	0.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	
POT107	BWS107	9/04/2018	BWS107_GW_09042018	Normal	NSW_0908_PFAS	0.01	0.04	0.07	0.11	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.12
POT107	BWS107	4/06/2019	0908_BWS107_190604	Normal	NSW_0908_PFAS	<0.01	0.04	0.03	0.07	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
POT107	BWS107	7/11/2019	0908_POT107_191107	Normal	NSW_0908_PFASOMP	<0.01	0.02	0.06	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05							



Table T10 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSA-A)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSA-A)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS	
LOR	0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.05	0.005	0.01	0.05	0.01	0.05
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Recreational Water	10			2																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS	PFAS - Perfluoroalkyl Sulfonic Acids	PFAS - Perfluoroalkyl Carboxylic Acids	PFAS - (n:2) Fluorotelomer Sulfonic Acids	PFAS - Perfluoroalkyl Sulfonamides																							
SW001	MD1	12/04/2018	MD1_SW_12042018	Normal	NSW_0908_PFAAS	0.06	3.14	0.55	3.69	0.03	0.04	0.07	-	<0.02	<0.1	0.04	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	4.03	
SW001	MD1	6/12/2018	0908_MD1_SW_181206	Normal	NSW_0908_PFAAS	0.07	2.92	0.68	3.6	0.04	0.05	0.07	-	<0.02	<0.1	0.04	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	4.03	
SW001	MD1	9/04/2019	0908_MD01_190409	Normal	NSW_0908_PFAAS	0.12	4.83	1.25	6.08	0.08	0.11	0.14	-	<0.02	0.1	0.06	0.25	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	-	
SW001	MD1	14/06/2019	0908_MD1_SW_190614	Normal	NSW_0908_PFAAS	0.03	2.45	0.38	2.83	0.02	0.02	0.03	-	<0.02	0.1	0.02	0.07	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	2.98	
SW001	MD1	5/11/2019	0908_MD1_SW_191105	Normal	NSW_0908_PFAASOMP	<0.01	0.08	<0.02	0.08	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.08	
SW001	MD1	2/06/2020	0908_SW001_200602	Normal	NSW_0908_PFAASOMP	0.04	2.24	0.48	2.72	0.03	0.03	0.06	-	<0.02	<0.1	0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	2.99	
SW001	MD1	27/10/2020	0908_SW001_201027	Normal	NSW_0908_PFAASMGMT	<0.04	0.49	0.20	0.69	<0.04	<0.04	<0.04	-	<0.02	<0.1	<0.04	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.69	
SW001	MD1	28/10/2020	0908_QC100_201028	Field_D	NSW_0908_PFAASMGMT	<0.05	0.60	0.25	0.85	<0.05	<0.05	<0.05	-	<0.02	<0.1	<0.05	0.08	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.93	
SW001	MD1	28/10/2020	0908_SW001_201028	Normal	NSW_0908_PFAASMGMT	<0.05	0.66	0.23	0.89	<0.05	<0.05	<0.05	-	<0.02	<0.1	<0.05	0.06	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.95	
SW001	MD1	20/11/2020	0908_QC102_201120	Field_D	NSW_0908_PFAASOMP	0.12	6.86	1.68	8.54	0.15	0.16	0.19	-	<0.02	<0.1	0.06	0.32	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	9.58	
SW001	MD1	20/11/2020	0908_QC202_201120	Interlab_D	NSW_0908_PFAASOMP	0.06	2.6	1	-	0.09	0.097	0.082	<0.01	<0.01	<0.05	0.039	0.18	0.028	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
SW001	MD1	20/11/2020	0908_SW001_201120	Normal	NSW_0908_PFAASOMP	0.13	5.30	1.67	6.97	0.16	0.16	0.19	-	<0.02	<0.1	0.06	0.33	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	8.05	
SW001	MD1	18/12/2020	0908_QC100_201218	Field_D	NSW_0908_PFAASOMP	0.03	1.89	0.42	2.31	0.03	0.03	0.04	-	<0.02	<0.1	0.02	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	2.53	
SW001	MD1	18/12/2020	0908_QC200_201218	Interlab_D	NSW_0908_PFAASOMP	0.03	1.8	0.44	-	0.022	0.026	0.035	<0.01	<0.01	<0.05	0.024	0.072	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-
SW001	MD1	18/12/2020	0908_SW001_201218	Normal	NSW_0908_PFAASOMP	0.03	1.85	0.39	2.24	0.03	0.03	0.04	-	<0.02	<0.1	<0.02	0.08	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	2.45	
SW001	MD1	21/12/2020	0908_SW001_2012211510	Normal	NSW_0908_PFAASOMP	0.02	0.81	0.20	1.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	1.07	
SW001	MD1	21/12/2020	0908_SW001_2012211610	Normal	NSW_0908_PFAASOMP	<0.01	0.45	0.09	0.54	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.54	
SW001	MD1	21/12/2020	0908_SW001_2012211710	Normal	NSW_0908_PFAASOMP	<0.01	0.39	0.09	0.48	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.48	
SW001	MD1	21/12/2020	0908_SW001_2012211810	Normal	NSW_0908_PFAASOMP	<0.01	0.49	0.14	0.63	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.65	
SW001	MD1	21/12/2020	0908_SW001_2012211910	Normal	NSW_0908_PFAASOMP	0.01	0.69	0.16	0.85	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.89	
SW001	MD1	21/12/2020	0908_SW001_2012212010	Normal	NSW_0908_PFAASOMP	0.01	0.57	0.14	0.71	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.75	
SW001	MD1	21/12/2020	0908_SW001_2012212110	Normal	NSW_0908_PFAASOMP	0.01	0.62	0.14	0.76	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.79	
SW001	MD1	21/12/2020	0908_SW001_2012212210	Normal	NSW_0908_PFAASOMP	0.01	0.59	0.13	0.72	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.75	
SW001	MD1	21/12/2020	0908_SW001_2012212310	Normal	NSW_0908_PFAASOMP	<0.01	0.44	0.10	0.54	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.54	
SW001	MD1	22/12/2020	0908_SW001_2012220010	Normal	NSW_0908_PFAASOMP	<0.01	0.45	0.09	0.54	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.54	
SW001	MD1	22/12/2020	0908_SW001_2012220110	Normal	NSW_0908_PFAASOMP	<0.01	0.27	0.06	0.33	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.33	
SW001	MD1	22/12/2020	0908_SW001_2012220210	Normal	NSW_0908_PFAASOMP	<0.01	0.36	0.10	0.46	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.46	
SW001	MD1	22/12/2020	0908_SW001_2012220310	Normal	NSW_0908_PFAASOMP	<0.01	0.46	0.14	0.60	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.62	
SW001	MD1	22/12/2020	0908_SW001_2012220410	Normal	NSW_0908_PFAASOMP	0.01	0.62	0.18	0.80	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	0.84	
SW001	MD1	22/12																															









Table T10 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononane sulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSEA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS
LOR	0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.05	0.005	0.01	0.05	0.01
PFAS NEMP 2020 Drinking Water	0.56			0.07																											
PFAS NEMP 2020 Recreational Water	10			2																											
PFAS NEMP 2020 Freshwater 99%	19	0.00023																													

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS	PFAS - Perfluoroalkyl Sulfonic Acids	PFAS - Perfluoroalkyl Carboxylic Acids	PFAS - (n:2) Fluorotelomer Sulfonic Acids	PFAS - Perfluoroalkyl Sulfonamides	Sum of PFAS																					
SW007	MD7	22/12/2020	0908_SW007_2012220950	Normal	NSW_0908_PFASOMP	0.03	2.74	0.26	3.00	<0.02	<0.02	0.03	-	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.05	3.24
SW007	MD7	22/12/2020	0908_SW007_2012221050	Normal	NSW_0908_PFASOMP	0.04	2.94	0.32	3.26	<0.02	<0.02	0.03	-	<0.02	<0.1	0.04	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.05	3.54
SW007	MD7	22/12/2020	0908_SW007_2012221150	Normal	NSW_0908_PFASOMP	0.04	3.37	0.36	3.73	<0.02	0.02	0.04	-	<0.02	<0.1	0.04	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.05	4.08
SW007	MD7	22/12/2020	0908_SW007_2012221250	Normal	NSW_0908_PFASOMP	0.05	3.66	0.42	4.08	<0.02	0.03	0.04	-	<0.02	<0.1	0.05	0.12	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.05	4.47
SW007	MD7	22/12/2020	0908_SW007_2012221350	Normal	NSW_0908_PFASOMP	0.06	4.76	0.53	5.29	0.02	0.03	0.05	-	<0.02	<0.1	0.06	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.05	5.77
SW007	MD7	29/01/2021	0908_QC103_210129	Field_D	NSW_0908_PFASOMP	0.11	9.64	1.16	10.8	0.04	0.07	0.10	-	<0.02	<0.1	0.08	0.24	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	11.5	
SW007	MD7	29/01/2021	0908_QC203_210129	Interlab_D	NSW_0908_PFASOMP	0.094	7.2	0.94	-	0.033	0.051	0.061	<0.01	<0.01	0.057	0.09	0.21	0.044	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
SW007	MD7	29/01/2021	0908_SW007_210129	Normal	NSW_0908_PFASOMP	0.10	7.30	0.86	8.16	0.03	0.05	0.07	-	<0.02	<0.1	0.09	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	8.73
SW007	MD7	29/01/2021	0908_SW007_2101291400	Normal	NSW_0908_PFASOMP	0.13	9.76	1.35	11.1	0.05	0.08	0.14	-	<0.02	<0.1	0.10	0.30	0.06	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	12.0	
SW007	MD7	29/01/2021	0908_SW007_2101291500	Normal	NSW_0908_PFASOMP	0.12	9.88	1.22	11.1	<0.02	0.07	0.12	-	<0.02	<0.1	0.15	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	11.9	
SW007	MD7	29/01/2021	0908_SW007_2101291600	Normal	NSW_0908_PFASOMP	0.12	10.2	1.08	11.3	0.02	0.06	0.12	-	<0.02	<0.1	0.06	0.24	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	12.0	
SW007	MD7	29/01/2021	0908_SW007_2101291700	Normal	NSW_0908_PFASOMP	0.10	8.36	0.89	9.25	<0.02	0.05	0.10	-	<0.02	<0.1	0.05	0.20	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	9.79	
SW007	MD7	29/01/2021	0908_SW007_2101291800	Normal	NSW_0908_PFASOMP	0.08	6.90	0.67	7.57	<0.02	0.03	0.08	-	<0.02	<0.1	0.04	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	8.10
SW007	MD7	29/01/2021	0908_SW007_2101291900	Normal	NSW_0908_PFASOMP	0.06	6.07	0.54	6.61	<0.02	0.03	0.05	-	<0.02	<0.1	0.05	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	6.95	
SW007	MD7	29/01/2021	0908_SW007_2101292000	Normal	NSW_0908_PFASOMP	0.07	5.58	0.59	6.17	<0.02	0.03	0.06	-	<0.02	<0.1	0.06	0.14	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	6.56
SW007	MD7	29/01/2021	0908_SW007_2101292100	Normal	NSW_0908_PFASOMP	0.06	5.83	0.60	6.43	0.02	0.03	0.06	-	<0.02	<0.1	0.04	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	6.80	
SW007	MD7	29/01/2021	0908_SW007_2101292200	Normal	NSW_0908_PFASOMP	0.06	5.52	0.53	6.05	<0.02	0.03	0.06	-	<0.02	<0.1	0.05	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	6.40	
SW007	MD7	29/01/2021	0908_SW007_2101292300	Normal	NSW_0908_PFASOMP	0.04	4.13	0.44	4.57	<0.02	0.02	0.04	-	<0.02	<0.1	0.02	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	4.81	
SW007	MD7	30/01/2021	0908_SW007_2101300000	Normal	NSW_0908_PFASOMP	0.06	5.13	0.61	5.74	<0.02	0.03	0.06	-	<0.02	<0.1	0.05	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	6.17	
SW007	MD7	30/01/2021	0908_SW007_2101300100	Normal	NSW_0908_PFASOMP	0.06	6.23	0.67	6.90	<0.02	0.04	0.06	-	<0.02	<0.1	0.08	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	7.32	
SW007	MD7	30/01/2021	0908_SW007_2101300200	Normal	NSW_0908_PFASOMP	0.07	6.14	0.72	6.86	<0.02	0.04	0.07	-	<0.02	<0.1	0.06	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	7.40	
SW007	MD7	30/01/2021	0908_SW007_2101300300	Normal	NSW_0908_PFASOMP	0.09	7.16	0.86	8.02	0.02	0.05	0.08	-	<0.02	<0.1	0.04	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	8.65	
SW007	MD7	30/01/2021	0908_SW007_2101300400	Normal	NSW_0908_PFASOMP	0.09	6.78	0.85	7.63	<0.02	0.04	0.08	-	<0.02	<0.1	0.04	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	8.21	
SW007	MD7	30/01/2021	0908_SW007_2101300500	Normal	NSW_0908_PFASOMP	0.09	7.36	0.95	8.31	0.02	0.06	0.09	-	<0.02	<0.1	0.08	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	9.04	
SW007	MD7	30/01/2021	0908_SW007_2101300600	Normal	NSW_0908_PFASOMP	0.09	7.70	0.88	8.58	0.03	0.05	0.09	-	<0.02	<0.1	0.04	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	9.23	
SW007	MD7	30/01/2021	0908_SW007_2101300700	Normal	NSW_0908_PFASOMP	0.09	7.49	0.87	8.36	<0.02	0.05	0.08	-	<0.02	<0.1	0.07	0.19	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	8.88	
SW007	MD7	30/01/2021	0908_SW007_2101300800	Normal	NSW_0908_PFASOMP	0.10	7.66	0.95	8.61	0.03	0.05	0.09	-	<0.02	<0.1	0.07	0.21	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	9.20	
SW007	MD7	30/01/2021	0908_SW007_2101300900	Normal	NSW_0908_PFASOMP	0.10	8.38	1.00	9.38	0.03	0.06	0.09	-	<0.02	<0.1	0.07	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	10.0	
SW007	MD7	30/01/2021	0908_SW007_2101301000	Normal	NSW_0908_PFASOMP	0.12	8.56	1.11	9.67	0.04	0.06	0.10	-	<0.02	<0.1	0.08	0.25	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	10.4	
SW007	MD7	30/01/2021	0908_SW007_2101301100	Normal	NSW_0908_PFASOMP	0.10	8.43	1.02	9.45	0.04	0.06	0.09	-	<0.02	<0.1	0.08	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	10.1	
SW007	MD7	30/01/2021	0908_SW007_2101301200	Normal	NSW_0																											

Table T10 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides													
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononane sulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSEA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS			
LOR	0.002	0.002			0.01	0.01	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05	0.005	0.01	0.05	0.01	
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																														
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																														
PFAS NEMP 2020 Freshwater 99%	19	0.00023																																

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFOS	PFHxS	PFNS	PFDA	PFBA	PFPeA	PFHxA	PFHpA	PFNA	PFDA	PFUnDA	PFDDA	PFTDA	PFTeDA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	FOSA	MeFOSA	MeFOSEA	MeFOSE	EFOSA	EFOSAA	EFOSE	Sum of PFAS			
SW009	MD8	17/11/2021	0908_SW009_211117	Normal	NSW_0908_PFASOMP	0.06	2.23	0.79	3.02	0.06	0.06	0.08	-	<0.02	<0.1	0.03	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	3.50	
SW009	MD8	17/05/2022	0908_SW009_220517	Normal	NSW_0908_PFASOMP	0.08	7.95	0.82	8.77	0.04	0.06	0.08	-	<0.02	<0.1	0.07	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	9.36	
SW014	MD14	20/12/2016	MD14_SW_161220	Normal	NSW_0908_PFAS	<0.01	0.02	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	
SW014	MD14	18/04/2018	MD14_SW_18042018	Normal	NSW_0908_PFAS	<0.01	0.14	<0.02	0.16	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.14	
SW014	MD14	18/04/2018	MD14_SW_18042018	Normal	NSW_0908_PFAS	-	-	-	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW014	MD14	6/12/2018	0908_MD14_SW_181206	Normal	NSW_0908_PFAS	0.02	0.45	0.21	0.66	<0.02	0.03	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.76	
SW014	MD14	13/06/2019	0908_MD14_SW_190613	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
SW014	MD14	13/06/2019	0908_QC120_190613	Field_D	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
SW014	MD14	13/06/2019	0908_QC220_190613	Interlab_D	NSW_0908_PFAS	<0.01	<0.02	0.011	0.031	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
SW014	MD14	5/11/2019	0908_MD14_SW_191105	Normal	NSW_0908_PFASOMP	<0.01	0.05	<0.02	0.05	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
SW014	MD14	4/06/2020	0908_SW014_200604	Normal	NSW_0908_PFASOMP	0.03	1.32	0.62	1.94	0.06	0.07	0.05	-	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2.32
SW014	MD14	26/11/2020	0908_QC110_201126	Field_D	NSW_0908_PFASOMP	0.06	2.93	0.79	3.72	0.06	0.07	0.07	-	<0.02	<0.1	0.04	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	4.19
SW014	MD14	26/11/2020	0908_QC210_201126	Interlab_D	NSW_0908_PFASOMP	0.053	2.5	0.74	-	0.054	0.059	0.049	<0.01	<0.01	<0.05	0.042	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
SW014	MD14	26/11/2020	0908_SW014_201126	Normal	NSW_0908_PFASOMP	0.06	3.24	0.77	4.01	0.06	0.07	0.06	-	<0.02	<0.1	0.05	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	4.50	
SW014	MD14	11/05/2021	0908_SW014_210511	Normal	NSW_0908_PFASOMP	0.01	0.61	0.20	0.81	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.86
SW014	MD14	17/11/2021	0908_SW014_211117	Normal	NSW_0908_PFASOMP	0.02	0.91	0.34	1.25	0.06	0.02	0.03	-	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.46
SW014	MD14	16/05/2022	0908_QC201_220516	Interlab_D	NSW_0908_PFASOMP	0.02	0.96	0.22	1.2	0.03	0.02	0.02	-	<0.02	<0.02	<0.02	0.05	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.3
SW014	MD14	16/05/2022	0908_SW014_220516	Normal	NSW_0908_PFASOMP	0.02	1.00	0.22	1.22	<0.02	0.02	0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.33
SW019	TC12	30/01/2017	TC12_SW_300117	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	TC12	9/02/2017	TC12_SW_090217	Normal	NSW_0908_PFAS	<0.01	0.27	0.17	0.44	0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.46
SW019	TC12	16/02/2017	TC12_SW_16022017	Normal	NSW_0908_PFAS	<0.01	0.02	0.02	0.04	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
SW019	TC12	24/02/2017	TC12_SW_240217	Normal	NSW_0908_PFAS	<0.01	0.17	0.05	0.22	0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.24
SW019	TC12	2/03/2017	TC12_SW_020317	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.01
SW019	TC12	9/03/2017	TC12_SW_090317	Normal	NSW_0908_PFAS	<0.01	0.03	0.03	0.06	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.06
SW019	TC12	16/03/2017	TC12_SW_20170316	Normal	NSW_0908_PFAS	<0.01	<0.01	0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
SW019	TC12	23/03/2017	TC12_SW_230317	Normal	NSW_0908_PFAS	<0.01	0.02	<0.02	0.02	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
SW019	TC12	30/03/2017	TC12_SW_300317	Normal	NSW_0908_PFAS	<0.01	0.03	0.04	0.07	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.07
SW019	TC12	6/04/2017	TC12_SW_060417	Normal	NSW_0908_PFAS	0.02	0.27	0.42	0.69	0.03	0.04	<0.02	-	<0.02	<0.1	<0.02	0.03																	



















Table T10 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTtDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSEA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	Sum of PFAS	
LOR	0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.05	0.05	0.005	0.01	0.05	0.01
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Recreational Water	10			2																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFOS	PFHxS	PFBA	PFPeA	PFHxA	PFHpA	PFNA	PFDA	PFUnDA	PFDDA	PFTDA	PFTtDA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	FOSA	MeFOSA	MeFOSEA	MeFOSE	EFOSA	EFOSAA	EFOSE	Sum of PFAS					
SW060	DD3	25/06/2021	0908_SW060_210625	Normal	NSW_0908_PFAASOMP	0.79	14.9	8.06	23.0	0.63	0.96	0.78	-	<0.02	0.2	0.40	2.00	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	29.0			
SW060	DD3	30/07/2021	0908_SW060_210730	Normal	NSW_0908_PFAASOMP	0.69	15.3	6.94	22.2	0.58	0.64	0.69	-	<0.02	0.2	0.33	1.91	0.27	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	27.6			
SW060	DD3	20/08/2021	0908_SW060_210820	Normal	NSW_0908_PFAASOMP	0.81	10.5	4.21	14.7	0.72	1.10	0.87	-	<0.02	0.3	0.47	2.43	0.33	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	21.7			
SW060	DD3	27/09/2021	0908_SW060_210927	Normal	NSW_0908_PFAASOMP	0.66	13.0	8.29	21.3	0.86	1.14	0.85	-	<0.02	<0.1	0.49	2.84	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	28.5			
SW060	DD3	25/10/2021	0908_SW060_211025	Normal	NSW_0908_PFAASOMP	0.85	16.3	8.41	24.7	1.07	1.42	0.94	-	<0.02	0.5	0.77	3.50	0.43	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	34.2			
SW060	DD3	15/11/2021	0908_SW060_211115	Normal	NSW_0908_PFAASOMP	0.62	13.4	8.04	21.4	1.22	1.14	0.63	-	<0.02	0.4	0.60	3.29	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	29.7			
SW060	DD3	18/05/2022	0908_SW060_220518	Normal	NSW_0908_PFAASOMP	0.31	7.21	3.90	11.1	0.35	0.50	0.35	-	<0.02	0.1	0.18	1.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	14.1			
SW062	DD5	17/06/2014	DD5_WATER	Normal	NSW_0908_PFAASOMP	<0.01	0.11	0.41	0.52	0.15	-	-	-	<0.01	-	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-			
SW062	DD5	13/01/2016	DD5_SW_1312016	Normal	NSW_0908_PFAASOMP	<0.002	0.088	-	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW062	DD5	14/12/2016	DD5_SW_161214	Normal	NSW_0908_PFAASOMP	<0.05	0.76	0.8	1.56	0.1	0.18	<0.05	-	<0.05	<0.1	<0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	2.06			
SW062	DD5	12/04/2018	DD5_SW_12042018	Normal	NSW_0908_PFAASOMP	0.09	2.69	1.21	3.9	0.11	0.12	0.09	-	<0.02	<0.1	0.07	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	4.64	
SW062	DD5	7/12/2018	0908_DD5_SW_181207	Normal	NSW_0908_PFAASOMP	0.1	2.64	1.35	3.99	0.13	0.14	0.1	-	<0.02	<0.1	0.08	0.26	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	4.86	
SW062	DD5	7/12/2018	0908_QC110_SW_181207	Field_D	NSW_0908_PFAASOMP	0.1	2.35	1.17	3.52	0.11	0.15	0.1	-	<0.02	<0.1	0.06	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	4.36	
SW062	DD5	7/12/2018	0908_QC205_SW_181207	Interlab_D	NSW_0908_PFAASOMP	0.07	2	1.1	3.1	0.091	0.098	0.061	<0.01	<0.01	<0.05	0.071	0.19	0.047	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	
SW062	DD5	13/06/2019	0908_DD5_SW_190613	Normal	NSW_0908_PFAASOMP	0.03	1.07	0.53	1.6	0.08	0.1	0.04	-	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.97		
SW062	DD5	6/11/2019	0908_DD5_SW_191106	Normal	NSW_0908_PFAASOMP	0.06	1.40	0.78	2.18	0.11	0.14	0.05	-	<0.02	<0.1	0.09	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	2.91	
SW062	DD5	2/06/2020	0908_SW062_200602	Normal	NSW_0908_PFAASOMP	0.12	2.63	1.96	4.59	0.28	0.26	0.06	-	<0.02	<0.1	0.11	0.36	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	5.85	
SW062	DD5	20/11/2020	0908_SW062_201120	Normal	NSW_0908_PFAASOMP	<0.01	0.12	0.15	0.27	<0.02	<0.02	-	-	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.32	
SW062	DD5	11/05/2021	0908_SW062_210511	Normal	NSW_0908_PFAASOMP	0.09	2.32	1.47	3.79	0.12	0.14	0.10	-	<0.02	<0.1	0.13	0.40	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	4.91	
SW062	DD5	17/11/2021	0908_QC211_211117	Interlab_D	NSW_0908_PFAASOMP	<0.01	0.05	0.12	0.17	0.01	0.01	<0.01	-	<0.02	<0.02	<0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	0.21	
SW062	DD5	17/11/2021	0908_SW062_211117	Normal	NSW_0908_PFAASOMP	<0.01	0.08	0.13	0.21	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.25	
SW062	DD5	16/05/2022	0908_SW062_220516	Normal	NSW_0908_PFAASOMP	<0.01	0.12	0.22	0.34	<0.02	0.02	<0.02	-	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.41	
SW079	TC2	14/01/2016	TC2_SW_1412016	Normal	NSW_0908_PFAASOMP	0.008	0.11	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW079	TC2	14/12/2016	TC2_SW_161214	Normal	NSW_0908_PFAASOMP	0.03	0.52	0.88	1.4	0.11	0.1	0.05	-	<0.02	<0.1	<0.02	0.05	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.78	
SW079	TC2	2/02/2017	TC2_SW_020217	Normal	NSW_0908_PFAASOMP	<0.05	1.34	0.35	1.69	<0.1	<0.1	<0.1	-	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.25	<0.25	<0.25	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25	1.69
SW079	TC2	9/02/2017	TC2_SW_090217	Normal	NSW_0908_PFAASOMP	<0.05	0.4	0.78	1.18	0.1	0.06	<0.05	-	<0.05	<0.2	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.39	
SW079	TC2	16/02/2017	TC2_SW_16022017	Normal	NSW_0908_PFAASOMP	<0.05	0.22	0.38	0.6	<0.05	<0.05	<0.05	-	<0.05	0.4	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	1.07	
SW079	TC2	24/02/2017	TC2_SW_240217	Normal	NSW_0908_PFAASOMP	<0.05	0.26	0.36	0.62	0.1	0.08	<0.05	-	<0.05	0.2	0.06	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.96	
SW079	TC2	3/03/2017	TC2_SW_030317	Normal	NSW_0908_PFAASOMP	<0.05	0.44	0.32	0.76	0.06	<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	0.82	
SW079	TC2	9/03/2017	TC2_SW_090317	Normal	NSW_0908_PFAASOMP	<0.01	0.12	0.06	0.18	<0.02	<0.02	<0.02	-	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<				











Table T11 - Historical Sediment Analytical Results

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononane sulfonic acid (PFNS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDa)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Ethyl perfluorooctane sulfonamide (EiFOSA)	N-Ethyl perfluorooctane sulfonamide (EiFOSE)	Sum of PFAS
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD009	MD8	17/11/2021	0908_SD009_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0171	0.0009	0.0180	<0.0002	<0.0002	<0.0002	-	0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0188		
SD009	MD8	17/05/2022	0908_QC105_220517	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0194	0.0016	0.0210	<0.0002	<0.0002	<0.0002	-	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0226		
SD009	MD8	17/05/2022	0908_QC205_220517	Interlab_D	NSW_0908_PFAASOMP	0.0001	0.035	0.0013	0.036	<0.0001	<0.0001	0.0003	-	0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.039		
SD009	MD8	17/05/2022	0908_SD009_220517	Normal	NSW_0908_PFAASOMP	<0.0002	0.0077	0.0004	0.0081	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0085		
SD014	MD14	20/12/2016	MD14_SED_161220	Normal	NSW_0908_PFAASOMP	<0.0002	0.0024	<0.0002	0.0024	0.0147	0.0031	0.0003	-	0.0009	<0.001	0.0015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0229		
SD014	MD14	12/04/2018	MD14_SED_12042018	Normal	NSW_0908_PFAASOMP	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002		
SD014	MD14	12/04/2018	MD14_SED_12042018	Normal	NSW_0908_PFAASOMP	-	-	-	0.0004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD014	MD14	6/12/2018	0908_MD14_SD_181206	Normal	NSW_0908_PFAASOMP	<0.0002	0.0017	<0.0002	0.0017	<0.0002	<0.0002	<0.0002	-	0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0021		
SD014	MD14	6/12/2018	0908_MD14_SD_181206	Normal	NSW_0908_PFAASOMP	-	-	-	0.0019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD014	MD14	13/06/2019	0908_MD14_SD_190613	Normal	NSW_0908_PFAASOMP	<0.0002	0.0011	<0.0002	0.0011	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0011		
SD014	MD14	13/06/2019	0908_MD14_SD_190613	Normal	NSW_0908_PFAASOMP	-	-	-	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD014	MD14	13/06/2019	0908_QC120_190613	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004		
SD014	MD14	13/06/2019	0908_QC120_190613	Field_D	NSW_0908_PFAASOMP	-	-	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD014	MD14	13/06/2019	0908_QC220_190613	Interlab_D	NSW_0908_PFAASOMP	<0.001	0.0028	<0.001	0.0038	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
SD014	MD14	5/11/2019	0908_MD14_SD_191105	Normal	NSW_0908_PFAASOMP	<0.0002	0.0011	<0.0002	0.0011	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0017	
SD014	MD14	4/06/2020	0908_SD014_200604	Normal	NSW_0908_PFAASOMP	<0.0002	0.0093	0.0008	0.0101	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0109		
SD014	MD14	26/11/2020	0908_QC109_201126	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0154	0.0008	0.0162	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0171		
SD014	MD14	26/11/2020	0908_QC109_201126	Interlab_D	NSW_0908_PFAASOMP	<0.001	0.037	0.0026	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
SD014	MD14	26/11/2020	0908_SD014_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0496	0.0028	0.0524	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0524		
SD014	MD14	11/05/2021	0908_SD014_210511	Normal	NSW_0908_PFAASOMP	0.0002	0.0705	0.0053	0.0758	<0.0002	<0.0002	0.0003	0.0006	0.0002	<0.001	<0.0002	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0787		
SD014	MD14	17/11/2021	0908_QC212_211117	Interlab_D	NSW_0908_PFAASOMP	0.0004	0.059	0.0063	0.065	0.0001	0.0002	0.0007	-	<0.0002	0.0003	0.0004	0.0007	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.068		
SD014	MD14	17/11/2021	0908_SD014_211117	Normal	NSW_0908_PFAASOMP	0.0005	0.0894	0.0063	0.0977	0.0006	0.0004	0.0006	-	<0.0002	<0.0002	0.0004	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.102		
SD014	MD14	16/05/2022	0908_SD014_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0039	0.0002	0.0041	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0044		
SD019	TC12	30/01/2017	TC12_SED_300117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0245	0.0025	0.027	<0.0002	<0.0002	0.0003	-	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0273		
SD019	TC12	12/04/2018	TC12_SED_12042018	Normal	NSW_0908_PFAASOMP	<0.0002	0.0035	<0.0002	0.0035	<0.0002	<0.0002	<0.0002	-	<0.0002	<0.001	&																				









Table T12 - Historical Surface Soil Analytical Results



	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
LOR	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0002	0.0005	0.0001
PFAS NEMP 2020 Public open space (HIL C)	10			1																											
PFAS NEMP 2020 Ecological direct exposure	10	1																													
PFAS NEMP 2020 Ecological indirect exposure		0.01																													

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
SS101	SS001, SS01	15/11/2019	0908_SS101_191115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0245	0.0079	0.0324	0.0007	0.0004	0.0003	<0.0002	<0.001	0.0014	0.0015	0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0381
SS101	SS001, SS01	19/06/2020	0908_SS001_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0028	0.0004	0.0032	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0032
SS101	SS001, SS01	26/11/2020	0908_SS101_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0139	0.0011	0.0150	0.0006	0.0008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0164
SS101	SS001, SS01	12/05/2021	0908_SS101_210512	Normal	NSW_0908_PFAASOMP	<0.0002	0.0058	0.0006	0.0064	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0064
SS101	SS001, SS01	17/11/2021	0908_SS101_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0040	0.0004	0.0044	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0044
SS101	SS001, SS01	16/05/2022	0908_SS101_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0023	0.0002	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0025
SS102	SS002, SS02	15/11/2019	0908_SS102_191115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0003	0.0119	0.0072	0.0191	0.0003	0.0004	0.0004	<0.0002	<0.001	0.0005	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0236
SS102	SS002, SS02	19/06/2020	0908_SS002_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0031	0.0003	0.0034	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0034
SS102	SS002, SS02	26/11/2020	0908_QC111_201126	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0208	0.0021	0.0229	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0229
SS102	SS002, SS02	26/11/2020	0908_QC211_201126	Interlab_D	NSW_0908_PFAASOMP	<0.0002	0.015	0.0018	-	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
SS102	SS002, SS02	26/11/2020	0908_SS102_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0190	0.0021	0.0211	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0211
SS102	SS002, SS02	12/05/2021	0908_SS102_210512	Normal	NSW_0908_PFAASOMP	<0.0002	0.0091	0.0010	0.0101	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0101
SS102	SS002, SS02	17/11/2021	0908_SS102_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0031	<0.0002	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0031
SS102	SS002, SS02	16/05/2022	0908_QC101_220516	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0132	0.0007	0.0139	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0149
SS102	SS002, SS02	16/05/2022	0908_SS102_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0149	0.0008	0.0157	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0157
SS103	SS003, SS03	15/11/2019	0908_SS103_191115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0022	0.0002	0.0024	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0024
SS103	SS003, SS03	19/06/2020	0908_SS003_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0121	0.0019	0.0140	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0142
SS103	SS003, SS03	1/12/2020	0908_SS103_201201	Normal	NSW_0908_PFAASOMP	<0.0002	0.0053	0.0003	0.0056	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0056
SS103	SS003, SS03	12/05/2021	0908_SS103_210512	Normal	NSW_0908_PFAASOMP	<0.0002	0.0024	0.0003	0.0027	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0027
SS103	SS003, SS03	19/11/2021	0908_SS103_211119	Normal	NSW_0908_PFAASOMP																															

Table T12 - Historical Surface Soil Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS	
LOR	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0002	0.0005	0.0001
PFAS NEMP 2020 Public open space (HIL C)	10			1																											
PFAS NEMP 2020 Ecological direct exposure	10	1																													
PFAS NEMP 2020 Ecological indirect exposure		0.01																													

Location Code	Alt. Name	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Sum of PFAS
SS109	SS009, SS09	15/11/2021	0908_SS109_211115	Normal	NSW_0908_PFASOMP	<0.0002	0.0020	<0.0002	0.0020	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0020
SS109	SS009, SS09	27/05/2022	0908_QC211_220527	Interlab_D	NSW_0908_PFASOMP	<0.0001	0.0008	<0.0001	0.0008	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0008
SS109	SS009, SS09	27/05/2022	0908_SS109_220527	Normal	NSW_0908_PFASOMP	<0.0002	0.0012	<0.0002	0.0012	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0012
SS110	SS010, SS10	15/11/2019	0908_SS110_191115	Normal	NSW_0908_PFASOMP	0.0003	0.0318	0.0024	0.0342	<0.0002	<0.0002	0.0003	<0.0002	<0.001	0.0004	0.0013	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0367
SS110	SS010, SS10	19/06/2020	0908_SS010_200619	Normal	NSW_0908_PFASOMP	<0.0002	0.0086	<0.0002	0.0086	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0086
SS110	SS010, SS10	20/11/2020	0908_SS110_201120	Normal	NSW_0908_PFASOMP	<0.0002	0.0138	0.0002	0.0140	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0140
SS110	SS010, SS10	12/05/2021	0908_SS110_210512	Normal	NSW_0908_PFASOMP	<0.0002	0.0036	<0.0002	0.0036	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0036
SS110	SS010, SS10	17/11/2021	0908_QC112_211117	Field_D	NSW_0908_PFASOMP	<0.0002	0.0035	<0.0002	0.0035	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0035
SS110	SS010, SS10	17/11/2021	0908_SS110_211117	Normal	NSW_0908_PFASOMP	<0.0002	0.0026	<0.0002	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0026
SS110	SS010, SS10	16/05/2022	0908_SS110_220516	Normal	NSW_0908_PFASOMP	<0.0002	0.0294	0.0006	0.0300	<0.0002	<0.0002	<0.0002	0.0009	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0309
SS111	SS011, SS11	15/11/2019	0908_SS111_191115	Normal	NSW_0908_PFASOMP	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SS111	SS011, SS11	19/06/2020	0908_SS011_200619	Normal	NSW_0908_PFASOMP	<0.0002	0.0009	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0009
SS111	SS011, SS11	12/11/2020	0908_SS111_201112	Normal	NSW_0908_PFASOMP	<0.0002	0.0004	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0004
SS111	SS011, SS11	12/05/2021	0908_SS111_210512	Normal	NSW_0908_PFASOMP	<0.0002	0.0006	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0006
SS111	SS011, SS11	17/11/2021	0908_SS111_211117	Normal	NSW_0908_PFASOMP	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0125	<0.0050	<0.0050	<0.0050	<0.0050	<0.0125	<0.0050	<0.0125	<0.0050	<0.0125	<0.0050
SS111	SS011, SS11	16/05/2022	0908_SS111_220516	Normal	NSW_0908_PFASOMP	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0002
SS112	SS012, SS12	15/11/2019	0908_SS112_191115	Normal	NSW_0908_PFASOMP	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002
SS112	SS012, SS12	19/06/2020	0908_SS012_200619	Normal	NSW_0908_PFASOMP	0.0008	0.0068	0.0024	0.0092	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0007	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0115
SS112	SS012, SS12	12/11/2020	0908_SS112_201112	Normal	NSW_0908_PFASOMP	<0.0002	0.0010	<0.0002	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005	0.0010
SS112	SS012, SS12	12/05/2021	0908_SS112_210512	Normal	NSW_0908_PFASOMP	<0.0002	0.0008	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	&lt																		

# Appendix C

## Calibration Certificates

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8023
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562 Task 1.2

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
<b>WAM Scientific</b> certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	11/05/2022
<b>Calibration Due</b>	11/11/2022

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8272
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562 Task 1.2

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	11/05/2022
<b>Calibration Due</b>	11/11/2022

**Certificate of Service and Calibration**

**Peristaltic Pump  
Geotech Geopump 2**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Geotech Geopump Peristaltic Pump
<b>Cable Length</b>	4.5m
<b>Serial Number</b>	Pump: 6231
<b>Serial Number</b>	Head: -
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562 Task 2.1

<b>Instrument Check</b>			
Item	Test	Test Passed	Comments
2 x 12V Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 12V
Battery Terminals	Check	✓	No damage
Charger	Condition/Check	✓	Functioning
Cabling	Check	✓	No damage
Alligator Clips	Check	✓	Protected, no damage
Casing	Check	✓	Clean, no damage
Handle	Check	✓	No damage
Pump Head	Check	✓	EZ2 Head, no damage
Pump Condition	Decontamination	✓	Decontaminated
Pump Operation	Operation	✓	Peristaltic pump functional
Pump Tubing	Replacement	✓	New 0.5m ¼" OD LDPE silicon tubing
Pump Speed	Operation	✓	Speed knob functional

<b>Inclusions</b>
2 x Sealed lead acid 12V batteries included 1x Carry case for 12V batteries included 1x Intrinsically safe charger (clips) included

<b>Declaration</b>
<b>WAM Scientific</b> certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The pump has been decontaminated and cleaned upon return from the previous hire and is in good working order.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	11/05/2022
<b>Calibration Due</b>	11/11/2022

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	20D101036
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562 Task 2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	16.9	16.8	16.9	°C
pH	pH 4.00	351750	4.01	3.82	4.01	pH
pH	pH 7.00	351621	7.00	7.16	7.00	pH
Conductivity	2760 µS/cm at 25°C	362912	2760	3143	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	364644/363903	242.7	240.5	242.7	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	362832	0.0	4.5	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	113.0	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	11/05/2022
<b>Calibration Due</b>	11/11/2022

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	20D102896
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562 Task 2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	16.7	16.7	16.7	°C
pH	pH 4.00	351750	4.01	4.05	4.01	pH
pH	pH 7.00	351621	7.00	7.00	7.00	pH
Conductivity	2760 µs/cm at 25°C	362912	2760	2843	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	364644/363903	242.8	242.7	242.8	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	362832	0.0	2.3	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	105.2	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	11/05/2022
<b>Calibration Due</b>	11/11/2022



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	60612562
Project Location:	Millstream	Client:	DEFENCE
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI Professional Plus
Serial Number:	

**CALIBRATION**

CALIBRATE WITH CALIBRATION SOLUTIONS BUMP TEST					
Date and Time:	17/5/22				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.00	2760	0	/
Calibration Reading:	3.99	7.02	2239	0	/
Calibration Temperature:	17.4	17.3	17°C	16.2	/

**ONGOING CHECKS**

BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature


17/5/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP		Project Number:	00612562	
Project Location:	Waharoona		Client:	Defence	
PM Name:	[REDACTED]		Fieldwork Staff Name:	I.W C.M	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WQM				
Make and Model:	ysi pro plus				
Serial Number:					
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	18.5.22				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	11993	0.0	/
Calibration Reading:	3.96	7.02	2022	0.03	/
Calibration Temperature:	11.1	10.9	11.2	11.1	/
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			18/5/22 _____ Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	60612 <del>562</del> 562
Project Location:	Williamstown	Client:	Defence
PM Name:		Fieldwork Staff Name:	

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	WAM scientific
Make and Model:	YSI Pro Plus
Serial Number:	20D102896

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS BUMP TEST

Date and Time:	17/5/22 7:45 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7	4	2338	0.0	/
Calibration Reading:	6.96	3.99	2201	0.00	/
Calibration Temperature:	17.4	16.9	17.0	16.9	/

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	18.5.22 7:45 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7	4	2233	0.0	/
Bump Test Reading:	7.02	4.03	2169	0.0	/
Bump Test Temperature:	15.3	15.3	15.6	15.3	/


COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

7.5

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

 \_\_\_\_\_ 18.5.22  
 Fieldwork Staff Signature Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	WLM RAFF	Client:	Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAN Scientific
Make and Model:	YSI Pro Plus
Serial Number:	200102896

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS BUMP TEST**

Date and Time:	19.5.22 9:00 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2180	0	/
Calibration Reading:	4.07 → 4.00	7.01	2179	0.00	/
Calibration Temperature:	13.8	13.8	13.8	13.8	/

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	16.5.22				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2233	0.0	/
Bump Test Reading:	4.01	7.03	2180	0.0	/
Bump Test Temperature:	18	18	18	17	/

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

[Empty space for comments]

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

*[Signature]*

19/5/22

Fieldwork Staff Signature


Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record


Q4AN(EV)-410-FM1

Project Name:	OMP WLM		Project Number:	60612562	
Project Location:	MLM RAAF		Client:	Defence	
PM Name:	[REDACTED]		Fieldwork Staff Name:		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM Scientific				
Make and Model:	YSI Pro Plus				
Serial Number:	20D101036				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	20.5.22 740				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2180	0	
Calibration Reading:	3.99	7.02	2307*	0.00	
Calibration Temperature:	13.8	13.8	13.8	13.8	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<p>* Recalibrated to 2180</p>					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 Fieldwork Staff Signature			3/6/22. Date		
Distribution: Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	60012562		
Project Location:	Williamstown UT	Client:	Defense		
PM Name:		Fieldwork Staff Name:	CM		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM				
Make and Model:	Pro-plus				
Serial Number:					
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	20.5.22 0730				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2190	0	
Calibration Reading:	3.98	7.01	2178	0.00	
Calibration Temperature:	12.8	13.8	13.8	13.8	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ <b>Fieldwork Staff Signature</b>			20.5.22 _____ <b>Date</b>		
Distribution: Project Central File					





ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	FTA	Project Number:	6056 2482
Project Location:	Williamstown	Client:	Defence
PM Name:	AT	Fieldwork Staff Name:	IW Con

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	<del>Brand</del> NAM
Make and Model:	Pro plus
Serial Number:	

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	25.5.22		800	
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:	4	7	2075	480
Calibration Reading:	3.93	6.97	2080	0
Calibration Temperature:	12.7	12.7	12.5	13.0

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:				
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:				
Bump Test Reading:				
Bump Test Temperature:				

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
Fieldwork Staff Signature

25.5.22  
Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	BMP FTA	Project Number:	60612562
Project Location:	Williamstown	Client:	Depon
PM Name:	<del>XXXXXX</del> GT	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	Argent WAM
Make and Model:	Pro plus
Serial Number:	

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	26.5.22		840	
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:	4.0	7.0	2180	0.0
Calibration Reading:	4.01	7.03	2150	0.0
Calibration Temperature:	14.0	14.3	13.9	14.4

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**


Date and Time:				
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:				
Bump Test Reading:				
Bump Test Temperature:				

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.



26/5/22  
 Fieldwork Staff Signature Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP		Project Number:	6062562	
Project Location:	Williamstown		Client:	Defence	
PM Name:	<del>PT</del>		Fieldwork Staff Name:	IW CM	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	Air net				
Make and Model:	Pro plus				
Serial Number:					
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	27.5.22 07:15				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2075	0	
Calibration Reading:	9.01	6.98	2070	0	
Calibration Temperature:	11.6	11.6	11.0	12.1	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			27.5.22 _____ Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	ONEP	Project Number:	606 12562
Project Location:	Williamstown	Client:	Delmar
PM Name:	[Redacted] AT	Fieldwork Staff Name:	[Redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	Atwater WAM
Make and Model:	Pro plus
Serial Number:	

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	30/5/22 735				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	2180		
Calibration Reading:	4.00	7.03	2182		
Calibration Temperature:	12.5	12.0	14.00		

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					


**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

MW3450

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.


30/5/22  
 \_\_\_\_\_  
 Fieldwork Staff Signature Date

Distribution: Project Central File







ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	60612562
Project Location:	Williamstown	Client:	Defence
PM Name:	GT	Fieldwork Staff Name:	lw cm

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	<del>Armet</del> CWAM
Make and Model:	Pro Plus
Serial Number:	

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	2.6.22 0840				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2075	0	
Calibration Reading:	4.02	7.01	2079	0	
Calibration Temperature:	8.2	8.2	12	8.3	

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

 Fieldwork Staff Signature	2.6.22 Date
--	----------------

Distribution: Project Central File

# Appendix D

## Analytical Data Validation

DATA VALIDATION	
<b>Project number:</b>	60612562
<b>Client:</b>	Defence
<b>Site:</b>	RAAF Base Williamtown
<b>Matrix type:</b>	Soil, Sediment, Surface water and Groundwater
<b>Primary Samples:</b>	12 soil, 23 sediment, 20 surface water and 130 groundwater
<b>Laboratory:</b>	ALS (Primary) and Envirolab (Secondary)
<b>Lab reference:</b>	ES2217533, ES2217534, ES2217535, ES2217536, ES2217537, ES2217538, ES2217539, ES2217540, ES2217541, ES2217542, ES2217543, ES2217544, ES2217545, ES2217546, ES2217547, ES2217548, ES2219407, ES2219408, ES2219409, ES2219411, ES2219412, ES2219413, 297361
<b>Validation by:</b>	██████████
<b>Date:</b>	26/08/2022
<b>Data verified by:</b>	██████████
<b>Date:</b>	01/09/2022
<b>Project Manager:</b>	██████████
<b>Key Issues:</b>	No significant issues were identified that have the potential to impact upon the reliability of the data or have a material implication to decision-making on the project. AECOM considers that the field and laboratory QA/QC procedures were appropriate for the purposes of the investigation.
Field Quality Assurance and Quality Controls	
Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).
Sampling personnel	Sampling was conducted by ██████████ ██████████ ██████████ ██████████ and ██████████ between the 16/05/2022 and 02/06/2022 (14 days total). Field personnel were suitably qualified and experienced AECOM environmental scientists and engineers.
Sampling Methodology	All water and soil samples were collected in accordance with the SAQP (AECOM, 2022), except for samples MW108S, MW109D, MW126S, MW171S, MW209S, MW245S and MW280S which were collected using bailers instead of Hydrasleeves™. The Hydrasleeves™ at these locations had either been removed or did not deploy properly.  After each sample was collected, re-usable equipment was decontaminated using Liquinox and the consumables (nitrile gloves, HydraSleeves™ materials and/or bailers) were disposed of in waste bins.
Chain of Custody	All samples taken were reported on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.
Rinsate Blank (RB)	Rinsate blank samples were collected at a frequency of 1 per day of sampling where equipment was re-used and decontaminated between sample points. Rinsate blank samples were either collected from the final rinse of the interface probe or sampling trowel following decontamination using laboratory supplied de-ionised water.



DATA VALIDATION	
Frequency of field QC	<p>Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at a frequency of 1 in 10 primary samples (10%). In total:</p> <ul style="list-style-type: none"> <li>• 19 water field duplicates (12.7%) and 18 water field triplicates were collected (12%) for 150 primary water samples;</li> <li>• 3 soil field duplicate and 3 soil field triplicates were collected (8.6%) for 35 primary soil samples;</li> </ul> <p>Overall, the number of field duplicates and triplicates collected meet the DQI requirements.</p>
Handling and preservation	<p>All samples were placed in a chilled cooler between immediately after sampling until handed to the laboratory. Samples were received preserved and chilled at the primary and secondary laboratory, with all containers received within the recommended temperature range (<math>4 \pm 2^{\circ}\text{C}</math>).</p>
Calibration of equipment	<p>Measurement of groundwater geochemical parameters was undertaken using YSI Professional Plus water quality meter, which was calibrated by the supplier prior to use, in accordance with the manufacturer's instructions and bump tested daily by the field personnel.</p> <p>Measurement of depth to groundwater was undertaken using an interface probe, which was serviced by the supplier prior to use.</p> <p>All equipment calibration and service certificates are presented in <b>Appendix C</b>.</p>
Laboratory Quality Assurance and Quality Controls	
Tests requested/reported	<p>All samples were analysed for the per- and polyfluoroalkyl substances (PFAS) extended suite.</p>
Holding time compliance	<p>Samples were extracted and analysed within recommended holding times.</p>
Laboratory	<p>Laboratory analysis was undertaken by National Association of Testing Authorities (NATA) accredited laboratories: ALS Environmental Pty Ltd (Sydney) (Accreditation No. 825), and Envirolab Services Pty Ltd (Envirolab, Sydney) (Accreditation number 2901).</p>

**DATA VALIDATION**

Frequency of laboratory QC	<p>The laboratory reported a sufficient frequency of quality control samples to assess whether the results had been reported to an acceptable accuracy and precision, except for the following:</p> <ul style="list-style-type: none"> <li>• 19 of the 23 laboratory certificates did not have required Laboratory Duplicates (DUP) for Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS, with 15 not conducting any and 4 reporting less than the expected rate of 10%.</li> <li>• 18 of the 23 laboratory certificates did not have required Matrix Spikes (MS) for Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS, with 17 not conducting any and 1 reporting less than the expected rate of 5%.</li> </ul> <p>Furthermore, one laboratory certificate reported a quality control frequency outlier in the Laboratory Duplicate (DUP) Moisture Content with an actual result of 8.33%, falling short of the expected 10%.</p> <p>Overall, the laboratory QC frequency is adequate to assess the data for useability.</p>
Method Blank (MB)	<p>All method blank concentrations were reported below the LOR for the analytes tested. This is presented in the laboratory Quality Control Report for both laboratories.</p>
Laboratory Duplicate (LD) Relative Percent Difference (RPD)	<p>The reported laboratory duplicate RPDs were within laboratories control limits. The laboratory duplicate RPDs are presented in the laboratory Quality Control Report for both laboratories.</p>
Laboratory Control Spike (LCS) recovery	<p>The reported laboratory Control Spikes (LCS) recoveries were within the laboratories control limits. This is presented in the laboratory Quality Control Report for both laboratories.</p>
Matrix Spike (MS) recovery	<p>The reported laboratory Matrix spike (MS) recoveries were within the laboratories control limits. This is presented in the laboratory Quality Control Report for both laboratories.</p>
Surrogate spike (SS) recovery	<p>The reported laboratory Surrogate Spikes (SS) recoveries were within the laboratories control limits. This is presented in the laboratory Quality Control Report for both laboratories.</p>

**Quality Assurance and Quality Controls Data Evaluation**

Comparison of Esdat data and laboratory results	<p>No anomalous results between Esdat output data and laboratory analytical results were noted.</p>
Anomalous data / Repeat Analysis	<p>Following the reporting of PFAS concentrations which were outside historical ranges at a number of locations (MW128D, MW139, MW146AD, MW230S, MW245D, MW842, MW844, SS107), the primary laboratory was requested to repeat the analysis to confirm the reported concentrations. The repeat analysis confirmed the originally reported concentrations in all but two locations (MW139 and MW844).</p> <p>Where re-analysis of the samples confirmed the initial reported result, the original result has been adopted for reporting purposes. For samples MW139 and MW844, the re-analysis results were adopted for reporting purposes given that they were consistent with historical data.</p>

DATA VALIDATION	
Data transcription	The laboratory results within the electronic data, the laboratory reports, and tables generated by AECOM were checked, with no anomalies identified.
Limits of reporting	With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.
Rinsate Blank Sample Results	The results of the rinsate blank sample analysis indicated that concentrations of PFAS were below the laboratory limits of reporting (LORs) for all analytes tested, indicating that the decontamination procedures were adequate.
Field duplicate and RPDs	<p>The duplicate RPDs were within laboratory control limits stated in the SAQP (AECOM, 2022), except for a number of PFAS compounds across soil and water samples in batches ES2217534 and ES2219407, where RPDs ranged from 31% to 180%.</p> <p>The elevated RPDs in two of the duplicate pairs are not considered significant due to the non-homogenous nature of the materials.</p> <p>The RPDs outside the 30% acceptable range in the water samples can be considered acceptable as the results were either less than 10 times the LOR (no limit for RPD acceptable range) or less than 20 times the LOR (and the RPD is less than 50%).</p>
Field triplicate RPDs	<p>The triplicate RPDs were within laboratory control limits stated in the SAQP (AECOM, 2022), except for a number of PFAS compounds across soil and water samples in batches ES2217534, ES2219408, ES2217533 and ES2219407, where RPDs ranged from 32% to 133%.</p> <p>The elevated RPDs in the soil samples are not considered significant due to the non-homogenous nature of the materials.</p> <p>The RPDs outside the 30% acceptable range in the water samples can be considered acceptable as the results are less than 10 times the LOR (no limit for RPD acceptable range) or are less than 20 times the LOR (and the RPD is less than 50%).</p>
Comments	
The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.	

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	ES2217533	ES2217533	ES2217533	ES2217534	ES2217534			
Field ID	0908_MW118_220517	0908_QC100_220517	RPD	0908_MW258D_220517	0908_QC102_220517	RPD	0908_SW059_220517	0908_QC103_220517	RPD
Sampled Date/Time	17/05/2022 9:49	17/05/2022 9:49		17/05/2022 10:35	17/05/2022 10:35		17/05/2022 9:45	17/05/2022 9:45	

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.05	0.05	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.05	0.05	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<b>0.03</b>	<b>0.02</b>	<b>40</b>
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.74	0.73	1
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.15	0.15	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.76	0.8	5
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.04	0.04	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.07	0.07	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.03	0.03	0
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.92	1.94	1
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.8	1.82	1
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.5	1.53	2

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	ES2217533		ES2217533	ES2217533		ES2217533	ES2217533	
Field ID	0908_MW263D_220518	0908_QC104_220518	RPD	0908_MW255D_220518	0908_QC106_220518	RPD	0908_MW232S_220518	0908_QC107_220518	RPD
Sampled Date/Time	18/05/2022 8:38	18/05/2022 8:38		18/05/2022 11:05	18/05/2022 11:05		18/05/2022 8:43	18/05/2022 8:43	

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	ES2217533	ES2217534	ES2217534	ES2217534	ES2217534
Field ID	0908_MW162S_220518	0908_QC108_220518	0908_SW108_220519	0908_QC110_220519	0908_SW055_220519	0908_QC111_220519
Sampled Date/Time	18/05/2022 13:41	18/05/2022 13:41	19/05/2022 9:45	19/05/2022 9:45	19/05/2022 11:00	19/05/2022 11:00

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	0.11	0.1	10	0.07	0.07	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.03	0.03	nc	0.05	0.05	0
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.07	0.06	15	0.06	0.06	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.05	0.04	22	0.05	0.05	0
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	0.89	0.79	12	1.01	0.96	5
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.22	0.2	10	0.23	0.23	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	7.71	6.98	10	3.81	3.98	4
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.09	0.08	12	0.08	0.08	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.06	0.06	0	0.08	0.08	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.07	0.07	0	0.06	0.08	29
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	9.3	8.41	10	5.5	5.64	3
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	9.17	8.29	10	5.36	5.5	3
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	8.6	7.77	10	4.82	4.94	2

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	ES2217533	ES2219407	ES2219407	ES2219407	ES2219407
Field ID	0908_MW202S_220519	0908_QC112_220519	0908_MW406_220524	0908_QC113_220524	0908_MW210S_220524	0908_QC114_220524
Sampled Date/Time	19/05/2022 13:08	19/05/2022 13:08	24/05/2022 9:40	24/05/2022 9:40	24/05/2022 12:36	24/05/2022 12:36

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.15	0.18	18
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	0.1	0.1	0
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.07	0.08	13
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.12	0.13	8
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.41	0.41	0	0.03	0.03	0	1.78	1.98	11
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.06	0.07	15	<0.02	<0.02	nc	0.67	0.73	9
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.65	0.71	9	<0.01	<0.01	nc	1.03	1.15	11
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.01	0.01	0	<0.01	<0.01	nc	<b>0.08</b>	<b>0.11</b>	<b>32</b>
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	<0.02	<0.02	nc	0.17	0.2	16
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.02	<0.02	nc	<0.02	<0.02	nc	<b>0.09</b>	<b>0.13</b>	<b>36</b>
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	1.17	1.22	4	0.03	0.03	0	4.26	4.79	12
	Sum of PFAS (WA DER List)	µg/L	0.01	1.15	1.2	4	0.03	0.03	0	4.02	4.51	11
	Sum of PFHxS and PFOS	µg/L	0.01	1.06	1.12	6	0.03	0.03	0	2.81	3.13	11

**Notes**  
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 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407
Field ID	0908_MW282S_220526	0908_QC115_220526	RPD	0908_MW315D_220526	0908_QC116_220526	RPD
Sampled Date/Time	26/05/2022 10:13	26/05/2022 10:13		26/05/2022 15:31	26/05/2022 15:31	

ChemGroup	ChemName	Units	LOR	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	
Per- and Poly-fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.04	29	<b>0.04</b>	<b>0.06</b>	<b>40</b>	0.08	0.1
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.16	0.21
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.05	0.06
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<b>0.27</b>	<b>0.37</b>	<b>31</b>	<b>0.1</b>	<b>0.16</b>	<b>46</b>	3.46	4.6
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<b>0.05</b>	<b>0.07</b>	<b>33</b>	<b>0.07</b>	<b>0.11</b>	<b>44</b>	<b>0.3</b>	<b>0.42</b>
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.03	0.04	29	<0.01	<0.01	nc	3.42	4.44
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<b>0.08</b>	<b>0.14</b>
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.04	29	<b>0.04</b>	<b>0.06</b>	<b>40</b>	0.27	0.36
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.06	0.07
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
	Sum of PFAS	µg/L	0.01	<b>0.41</b>	<b>0.56</b>	<b>31</b>	<b>0.25</b>	<b>0.39</b>	<b>44</b>	7.88	10.4
	Sum of PFAS (WA DER List)	µg/L	0.01	<b>0.38</b>	<b>0.52</b>	<b>31</b>	<b>0.21</b>	<b>0.33</b>	<b>44</b>	7.45	9.83
	Sum of PFHxS and PFOS	µg/L	0.01	<b>0.3</b>	<b>0.41</b>	<b>31</b>	<b>0.1</b>	<b>0.16</b>	<b>46</b>	6.88	9.04

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 High RPDs (>30%) are highlighted in bold



Table D1 - Water Field RPDs

		Lab Report Number		ES2219407		ES2219407		ES2219407		ES2219407		ES2219407		ES2219407	
		Field ID		0908_MW132S_220530		0908_QC118_220530		0908_MW160_220531		0908_QC119_220531		0908_MW158D_220601		0908_QC120_220601	
		Sampled Date/Time		30/05/2022 13:52		30/05/2022 13:52		31/05/2022 8:54		31/05/2022 8:54		1/06/2022 10:49		1/06/2022 10:49	
ChemGroup	ChemName	Units	LOR												
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<b>0.14</b>	<b>0.2</b>	<b>35</b>	<b>0.02</b>	<b>0.04</b>	<b>67</b>	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<b>0.34</b>	<b>0.52</b>	<b>42</b>	<0.01	0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<b>0.48</b>	<b>0.72</b>	<b>40</b>	<b>0.02</b>	<b>0.05</b>	<b>86</b>	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<b>0.48</b>	<b>0.72</b>	<b>40</b>	<b>0.02</b>	<b>0.05</b>	<b>86</b>	<0.01	<0.01	nc	<0.01	<0.01	nc
Sum of PFHxS and PFOS	µg/L	0.01	<b>0.48</b>	<b>0.72</b>	<b>40</b>	<b>0.02</b>	<b>0.05</b>	<b>86</b>	<0.01	<0.01	nc	<0.01	<0.01	nc	

**Notes**  
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Table D1 - Water Field RPDs

Lab Report Number	ES2219407	ES2219407	ES2217533	297361	ES2217534	297361
Field ID	0908_MW264S_220602	0908_QC121_220602	0908_MW258S_220517	0908_QC200_220517	0908_SW014_220516	0908_QC201_220516
Sampled Date/Time	2/06/2022 8:57	2/06/2022 8:57	17/05/2022 10:55	17/05/2022 10:55	16/05/2022 14:45	16/05/2022 14:45

ChemGroup	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	0.03	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	0.02	0.02	0
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	0.02	nc	<0.01	<0.01	nc	0.22	0.22	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	0.05	0.05	0
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.02	<0.01	nc	<0.01	<0.01	nc	1	0.96	4
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.02	0.02	0
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.01	nc	0.02	0.02	0
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	0.02	0.02	nc	<0.01	<0.01	nc	1.33	1.3	2
	Sum of PFAS (WA DER List)	µg/L	0.01	0.02	0.02	nc						
	Sum of PFHxS and PFOS	µg/L	0.01	0.02	0.02	nc	<0.01	<0.01	nc	1.22	1.2	2

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	297361	ES2217534	297361	ES2217533	297361
Field ID	0908_MW257S_220517	0908_QC202_220517	0908_SW059_220517	0908_QC203_220517	0908_MW263S_220518	0908_QC204_220518
Sampled Date/Time	17/05/2022 11:42	17/05/2022 11:42	17/05/2022 9:45	17/05/2022 9:45	18/05/2022 8:59	18/05/2022 8:59

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.05	0.05	nc	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	0.03	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.05	0.06	18	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.03	0.03	0	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	0.74	0.75	1	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.15	0.13	14	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	0.76	0.72	5	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.04	0.05	22	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.07	0.06	15	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.03	0.03	0	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	1.92	1.9	1	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	1.8					
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	1.5	1.5	0	<0.01	<0.01	nc

**Notes**  
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 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	297361		ES2217533	297361		ES2217533	297361	
Field ID	0908_MW255S_220518	0908_QC206_220518	RPD	0908_MW232D_220518	0908_QC207_220518	RPD	0908_MW162D_220518	0908_QC208_220518	RPD
Sampled Date/Time	18/05/2022 11:16	18/05/2022 11:16		18/05/2022 8:50	18/05/2022 8:50		18/05/2022 13:56	18/05/2022 13:56	

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc

**Notes**  
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 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2217533	297361	ES2217533	297361	ES2219407	297361
Field ID	0908_MW468_220519	0908_QC210_220519	0908_MW202D_220519	0908_QC212_220519	0908_MW406_220524	0908_QC213_220524
Sampled Date/Time	19/05/2022 10:20	19/05/2022 10:20	19/05/2022 13:18	19/05/2022 13:18	24/05/2022 9:40	24/05/2022 9:40

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	0.12	0.12	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.15	0.16	6	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	0.1	0.1	0	<0.1	<0.02	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	0.03	0.03	0	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.3	0.29	3	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.12	0.12	0	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	3.38	3.6	6	<b>0.1</b>	<b>0.05</b>	<b>67</b>	0.03	0.03	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.67	0.56	18	0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	0.04	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	16	17	6	0.12	0.11	9	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.29	0.35	19	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.23	0.2	14	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.23	0.24	4	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	21.7	23	6	<b>0.24</b>	<b>0.16</b>	<b>40</b>	0.03	0.03	0
	Sum of PFAS (WA DER List)	µg/L	0.01							0.03		
	Sum of PFHxS and PFOS	µg/L	0.01	19.4	21	8	<b>0.22</b>	<b>0.16</b>	<b>32</b>	0.03	0.03	0

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
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 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2219407	297361		ES2219407	297361		ES2219407	297361	
Field ID	0908_MW210D_220524	0908_QC214_220524	RPD	0908_MW240D_220526	0908_QC215_220526	RPD	0908_MW244S_220530	0908_QC217_220530	RPD
Sampled Date/Time	24/05/2022 12:35	24/05/2022 12:35		26/05/2022 10:25	26/05/2022 10:25		30/05/2022 9:57	30/05/2022 9:57	

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.01	nc	0.02	0.02	nc	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	0.01	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	0.01	nc	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.03	0.03	0	0.4	0.32	22	0.04	0.04	0
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	nc	0.04	0.03	29	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	0.04	0.03	29	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.06	0.05	18	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.01	nc	0.04	0.03	29	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<b>0.03</b>	<b>0.07</b>	<b>80</b>	0.6	0.5	18	0.04	0.04	0
	Sum of PFAS (WA DER List)	µg/L	0.01									
	Sum of PFHxS and PFOS	µg/L	0.01	0.03	0.03	0	0.44	0.35	23	0.04	0.04	0

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2219407	297361		ES2219407	297361		ES2219407	297361	
Field ID	0908_MW132D_220530	0908_QC218_220530	RPD	0908_MW318D_220531	0908_QC219_220530	RPD	0908_MW158S_220601	0908_QC220_220601	RPD
Sampled Date/Time	30/05/2022 14:00	30/05/2022 14:00		31/05/2022 9:48	31/05/2022 9:48		1/06/2022 10:56	1/06/2022 10:56	

ChemGroup	ChemName	Units	LOR									
Per- and Poly- fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.02	0.02	0	0.19	0.18	5	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	0.03	nc	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.1	0.1	0	<0.02	0.02	nc	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.01	nc	<0.02	0.02	nc	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.7	0.61	14	0.6	0.55	9	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.08	0.07	13	0.28	0.26	7	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.41	0.38	8	0.04	0.04	0	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.06	0.06	0	0.02	0.02	0	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<b>0.04</b>	<b>0.02</b>	<b>67</b>	<b>0.2</b>	<b>0.14</b>	<b>35</b>	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.05	0.05	0	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	1.41	1.3	8	1.38	1.3	6	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01									
	Sum of PFHxS and PFOS	µg/L	0.01	1.11	0.99	11	0.64	0.59	8	<0.01	<0.01	nc

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D1 - Water Field RPDs

Lab Report Number	ES2219407	297361
Field ID	0908_MW264D_220602	0908_QC221_220602
Sampled Date/Time	2/06/2022 8:51	2/06/2022 8:51

ChemGroup	ChemName	Units	LOR			
Per- and	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc
Poly-	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc
fluoroalkyl	6:2 Fluorotelomer Sulfonate (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc
Substances	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01			
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc

**Notes**  
 LOR = Limit of Reporting  
 µg/L = micrograms per Liter  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold



Table D2 - Soil Field RPDs

Lab Report Number	ES2217535	ES2217535	ES2217534	ES2217534	ES2217534	ES2217534
Field ID	0908_SS102_220516	0908_QC101_220516 RPD	0908_SD009_220517	0908_QC105_220517 RPD	0908_SD108_220519	0908_QC109_220519 RPD
Sampled Date/Time	16/05/2022 14:25	16/05/2022 14:25	17/05/2022 11:25	17/05/2022 11:25	19/05/2022 9:45	19/05/2022 9:45

Chem_Group	ChemName	Units	LOR									
Per- and Polyfluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.001	0
	Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<b>&lt;0.0002</b>	<b>0.0003</b>	<b>40</b>	<b>0.001</b>	<b>0.0028</b>	<b>95</b>
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<b>&lt;0.0002</b>	<b>0.0004</b>	<b>67</b>
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0008	0.0007	13	<b>0.0004</b>	<b>0.0016</b>	<b>120</b>	<b>0.0016</b>	<b>0.0043</b>	<b>92</b>
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0006	0.0008	29	<0.0002	<0.0002	0	<b>0.0003</b>	<b>0.0007</b>	<b>80</b>
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<b>0.0004</b>	<b>0.0013</b>	<b>106</b>	<b>0.0029</b>	<b>0.0066</b>	<b>78</b>
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0149	0.0132	12	<b>0.0077</b>	<b>0.0194</b>	<b>86</b>	<b>0.0377</b>	<b>0.0879</b>	<b>80</b>
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0002	0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0165	0.0149	10	<b>0.0085</b>	<b>0.0226</b>	<b>91</b>	<b>0.0435</b>	<b>0.103</b>	<b>81</b>
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0165	0.0149	10	<b>0.0081</b>	<b>0.021</b>	<b>89</b>	<b>0.0396</b>	<b>0.0929</b>	<b>80</b>
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0157	0.0139	12	<b>0.0081</b>	<b>0.021</b>	<b>89</b>	<b>0.0393</b>	<b>0.0922</b>	<b>80</b>

**Notes**  
 LOR = Limit of Reporting  
 mg/kg = milligrams per kilogram  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D2 - Soil Field RPDs

		ES2217534			297361			ES2217534			297361			ES2219408			297361		
		0908_SD009_220517			0908_QC205_220517 RPD			0908_SD055_220519			0908_QC209_220519 RPD			0908_SS109_220527			0908_QC211_220527 RPD		
		17/05/2022 11:25			17/05/2022 11:25			19/05/2022 11:13			19/05/2022 11:13			27/05/2022 10:10			27/05/2022 10:10		
Chem_Group	ChemName	Units	LOR																
Per- and Poly-fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	0	<0.0005	<0.0001	0	<0.0005	<0.0001	0	<0.0005	<0.0001	0	<0.0005	<0.0001	0	
	6:2 Fluorotelomer Sulfonate (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	0	<0.0005	0.0001	0	<0.0005	0.0001	0	<0.0005	<0.0001	0	<0.0005	<0.0001	0	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	<0.0005	<0.0002	0	
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0004	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	<0.0005	<0.001	0	
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.0002	0	<0.001	<0.0002	0	<0.001	<0.0002	0	<0.001	<0.0002	0	<0.001	<0.0002	0	
	Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0002	<b>&lt;0.0002</b>	<b>0.001</b>	<b>133</b>	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<b>&lt;0.0002</b>	<b>0.0003</b>	<b>40</b>	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0004</b>	<b>0.0013</b>	<b>106</b>	0.0007	0.0006	15	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	0	<0.0002	0.0002	0	<0.0002	0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<b>0.0004</b>	<b>0.002</b>	<b>133</b>	<0.0002	<0.001	0	<0.0002	<0.001	0	<0.0002	<0.001	0	<0.0002	<0.001	0	
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0077</b>	<b>0.035</b>	<b>128</b>	0.0092	0.01	8	<b>0.0012</b>	<b>0.0008</b>	<b>40</b>							
	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	<0.0002	<0.0001	0	
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	<0.0005	<0.005	0	
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	<0.0002	<0.0005	0	
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0085</b>	<b>0.039</b>	<b>128</b>	0.0099	0.011	11	<b>0.0012</b>	<b>0.0008</b>	<b>40</b>							
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0081	0.036	127	0.0099	0.011	11	0.0012	0.0008	40							
Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0081</b>	<b>0.036</b>	<b>127</b>	0.0099	0.011	11	<b>0.0012</b>	<b>0.0008</b>	<b>40</b>								

**Notes**  
 LOR = Limit of Reporting  
 mg/kg = milligrams per kilogram  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%) are highlighted in bold

Table D3 - Rinsate Blanks

			ES2217548	ES2217548	ES2217548	ES2217548	ES2217548	ES2217548	ES2217548	ES2217548	ES2219407	ES2219407
Lab Report Number			0908_QC300_220516	0908_QC301_220516	0908_QC302_220517	0908_QC303_220517	0908_QC304_220518	0908_QC305_220518	0908_QC306_220519	0908_QC307_220520	0908_QC308_220523	
Field ID			16/05/2022 17:04	16/05/2022 16:04	17/05/2022 16:32	17/05/2022 16:45	18/05/2022 17:10	18/05/2022 17:00	19/05/2022 18:00	20/05/2022 16:18	23/05/2022 16:20	
Sample Type			Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer Sulfonate (6:2 FIS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

Table D3 - Rinsate Blanks

Lab Report Number	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407	ES2219407
Field ID	0908_QC309_220524	0908_QC310_220525	0908_QC311_220526	0908_QC312_220527	0908_QC313_220530	0908_QC314_220531	0908_QC315_220601	0908_QC316_220602	
Sampled_Date/Time	24/05/2022 16:21	25/05/2022 16:22	26/05/2022 16:23	27/05/2022 16:25	30/05/2022 16:26	31/05/2022 16:27	1/06/2022 16:24	2/06/2022 15:10	
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Chem_Group	ChemName	Units	LOR								
Per- and Poly-fluoroalkyl Substances	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer Sulfonate (6:2 FIS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

# Appendix E

## Laboratory Certificates

**CHAIN OF CUSTODY**

COC#: 38358 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

P Tran  
2/6/22 19:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:



CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

**SAMPLE DETAILS****ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_POT107_220531		31/05/2022 11:16 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW139_220531		31/05/2022 10:58 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
Sydney  
Work Order Reference  
**ES2219413**

Telephone : + 61-2-8764 8555

**CHAIN OF CUSTODY**  
**ALS** COC#: 38358 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT107_220531	HDPE (no PTFE)	20 mL	00352010048187	Grey	No	
001	0908_POT107_220531	HDPE (no PTFE)	20 mL	00350621032096	Grey	No	
001	0908_POT107_220531	HDPE (no PTFE)	20 mL	00352010028507	Grey	No	
002	0908_MW139_220531	HDPE (no PTFE)	20 mL	00350621031982	Grey	No	
002	0908_MW139_220531	HDPE (no PTFE)	20 mL	00352010028596	Grey	No	
002	0908_MW139_220531	HDPE (no PTFE)	20 mL	00352010048112	Grey	No	

**Total Bottle Count: ALS: 6, Non ALS: 0**




ALS Use Only

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager: [Redacted]  
 Phone: [Redacted]  
 ALS Compass COC Reference: See instructions Samples: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<b>Special Instructions:</b> ES2219407-37861 - <del>2015</del> 38358 ES2219413 ES2219408-37864 - 38197 ES2219412 ES2219409-38180 - 38192 ES2219411	ALS Use Only
	Custody seal intact? YES NO <u>N/A</u>
	Free ice / frozen ice bricks upon receipt? <u>YES</u> NO N/A
Random sample temperature on receipt? <u>2.3</u> °C	

Custody:			
Relinquished by: 	Received by: TO'B	Relinquished by: KS	Received by:
Date / Time: 2.6.22 4:42	Date / Time: 2/6/22 4:44 pm.	Date / Time: 2/6/22	Date / Time:

**EMAILED**

LIST OF OPIGIN:  
ADW/CANTILE

RP 2/6/22 2:40





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219413

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 38358  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due Date : 09-Jun-2022

Issue Date : 03-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219413-001	31-May-2022 11:16	0908_POT107_220531	✓
ES2219413-002	31-May-2022 10:58	0908_MW139_220531	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2219413</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 38358 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 16:44 <b>Date Analysis Commenced</b> : 06-Jun-2022 <b>Issue Date</b> : 04-Jul-2022 11:24
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	Organic Chemist	Sydney Organics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (04/07/2022): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X for sample 002.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW139\_220531

				Sampling date / time	---	---	---	---
				31-May-2022 10:58	---	---	---	---
Compound	CAS Number	LOR	Unit	ES2219413-002	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	---	---	---	---
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	---	---	---	---
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	---	---	---	---
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	---	---	---	---
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	---	---	---	---
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	---	---	---	---
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	---	---	---	---
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	---	---	---	---
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	---	---	---	---
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	---	---	---	---
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	---	---	---	---
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	---	---	---	---
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	---	---	---	---
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	---	---	---	---
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	---	---	---	---
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	---	---	---	---
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	---	---	---	---



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_MW139_220531	----	----	----	----
		Sampling date / time	31-May-2022 10:58	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219413-002	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	101	----	----	----
13C8-PFOA	----	0.02	%	99.3	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER (Matrix: WATER)		Sample ID		0908_POT107_22053	----	----	----	----
		Sampling date / time		31-May-2022 11:16	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219413-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.04</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.04</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.04</b>	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----





## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT107\_22053  
1

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Sampling date / time

31-May-2022 11:16

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Compound

CAS Number

LOR

Unit

ES2219413-001

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-----

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.12	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.12	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	109	----	----	----	----
13C8-PFOA	----	0.02	%	107	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219413	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM-R	Issue Date	: 04-Jul-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT107_220531,	0908_MW139_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✔	08-Jun-2022	27-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT107_220531,	0908_MW139_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✔	08-Jun-2022	27-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_POT107_220531,	0908_MW139_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✔	08-Jun-2022	27-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT107_220531,	0908_MW139_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✔	08-Jun-2022	27-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_POT107_220531,	0908_MW139_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✔	08-Jun-2022	27-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2219413</b>	<b>Page</b>	: 1 of 4
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 02-Jun-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 06-Jun-2022
<b>C-O-C number</b>	: 38358	<b>Issue Date</b>	: 04-Jul-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM-R		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Organic Chemist	Sydney Organics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385303)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	120	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	104	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	114	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385303)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	110	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	129	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	123	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	126	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	124	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385303)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	123	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	118	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	121	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	124	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	115	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	121	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

RELINQUISHED BY:	RECEIVED BY: <i>P. Tom</i>	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: <i>27/6/22 19:30</i>	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	C		
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT087_220527		27/05/2022 11:26 AM	Water	ALS: 3 Non ALS: 0	No		X		
002	0908_POT089_220527		27/05/2022 11:49 AM	Water	ALS: 3 Non ALS: 0	No		X		
003	0908_SW019_220527		27/05/2022 12:05 PM	Water	ALS: 3 Non ALS: 0	No		X		
004	0908_SD019_220527		27/05/2022 12:05 PM	Soil	ALS: 1 Non ALS: 0	No	X			

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2219412**



Telephone : + 61-2-8784 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

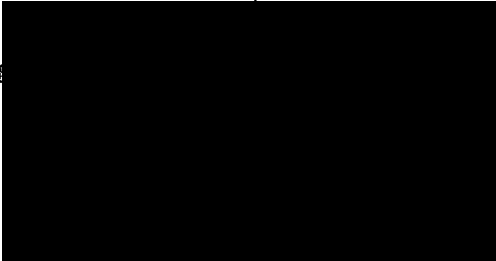
SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT087_220527	HDPE (no PTFE)	20 mL	00350621036522	Grey	No	
001	0908_POT087_220527	HDPE (no PTFE)	20 mL	00350621036427	Grey	No	
001	0908_POT087_220527	HDPE (no PTFE)	20 mL	00350621036487	Grey	No	
002	0908_POT089_220527	HDPE (no PTFE)	20 mL	00350621036930	Grey	No	
002	0908_POT089_220527	HDPE (no PTFE)	20 mL	00350621036941	Grey	No	
002	0908_POT089_220527	HDPE (no PTFE)	20 mL	00350621036669	Grey	No	
003	0908_SW019_220527	HDPE (no PTFE)	20 mL	00350621036907	Grey	No	
003	0908_SW019_220527	HDPE (no PTFE)	20 mL	00350621036871	Grey	No	
003	0908_SW019_220527	HDPE (no PTFE)	20 mL	00350621036727	Grey	No	
004	0908_SD019_220527	HDPE Soil Jar	200 mL	00621019053930	Grey	No	

**Total Bottle Count: ALS: 10, Non ALS: 0**



ALS Use Only


## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager: 

ALS Compass COC Reference: See instructions Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Phone: \_\_\_\_\_

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<b>Special Instructions:</b> ES2219407-37861 - <del>ES2219413</del> 38358 ES2219413 ES2219408-37864 - 38197 ES2219412 ES2219409-38180 - 38192 ES2219411	<b>ALS Use Only</b> Custody seal intact? YES NO <u>N/A</u> Free ice / frozen ice bricks upon receipt? <u>YES</u> NO N/A Random sample temperature on receipt? <u>2.3</u> °C
--	--

<b>Custody:</b>			
Relinquished by:  Date / Time: 2.6.22 4:42	Received by: TO'B Date / Time: 2/6/22 4:44 pm.	Relinquished by: KS Date / Time: 2/6/22	Received by:  Date / Time:

**MAILED**

OFFICE OF ORIGIN:  
NEWCASTLE

RP 2/6/22 2:40



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219412

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 38197  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due Date : 09-Jun-2022

Issue Date : 03-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2219412-004	27-May-2022 12:05	0908_SD019_220527	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219412-001	27-May-2022 11:26	0908_POT087_220527	✓
ES2219412-002	27-May-2022 11:49	0908_POT089_220527	✓
ES2219412-003	27-May-2022 12:05	0908_SW019_220527	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQulS (ESRN\_EQUIS)

Email  
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Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

Email  
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Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2219412**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 38197  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 9  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 02-Jun-2022 16:44  
**Date Analysis Commenced** : 06-Jun-2022  
**Issue Date** : 10-Jun-2022 14:56



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: POTABLE WATER (Matrix: WATER)		Sample ID		0908_POT087_22052	0908_POT089_22052	----	----	----
		Sampling date / time		27-May-2022 11:26	27-May-2022 11:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-001	ES2219412-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.09	0.26	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.26	0.33	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

				0908_POT087_22052	0908_POT089_22052	----	----	----
				7	7	----	----	----
				27-May-2022 11:26	27-May-2022 11:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-001	ES2219412-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.35	0.69	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.35	0.59	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.35	0.67	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	109	111	----	----	----
13C8-PFOA	----	0.02	%	105	110	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD019_220527	----	----	----	----
		Sampling date / time		27-May-2022 12:05	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-004	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	59.9	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0125	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID	0908_SD019_220527		----	----	----	----
		Sampling date / time	27-May-2022 12:05		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-004	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0132	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0132	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0132	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	95.0	----	----	----	----
13C8-PFOA	----	0.0002	%	93.0	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW019_220527	----	----	----	----
		Sampling date / time		27-May-2022 12:05	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-003	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.30	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.33	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW019_220527	----	----	----	----
		Sampling date / time	27-May-2022 12:05	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219412-003	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	<b>0.75</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.63</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.73</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	<b>108</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>106</b>	----	----	----





### Surrogate Control Limits

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219412	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM-R	Issue Date	: 10-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 4
Order number	: 60612562_2.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>HDPE Soil Jar (EA055)</b> 0908_SD019_220527	27-May-2022	----	----	----	07-Jun-2022	10-Jun-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD019_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_220527, 0908_SW019_220527	0908_POT089_220527,	27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_220527, 0908_SW019_220527	0908_POT089_220527,	27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_220527, 0908_SW019_220527	0908_POT089_220527,	27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_220527, 0908_SW019_220527	0908_POT089_220527,	27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_220527, 0908_SW019_220527	0908_POT089_220527,	27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2219412</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 38197 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 4 <b>No. of samples analysed</b> : 4	<b>Page</b> : 1 of 8  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 <b>Date Analysis Commenced</b> : 06-Jun-2022 <b>Issue Date</b> : 10-Jun-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4384432)</b>									
ES2219409-002	Anonymous	EA055: Moisture Content	----	0.1	%	28.9	28.3	1.9	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518)</b>									



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.5	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.5	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.8	65.0	137



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.6	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385303)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	120	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	104	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	114	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385303)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	110	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	129	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	123	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	126	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	124	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385303)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	123	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	118	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	121	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	124	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	115	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	121	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	89.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	89.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	83.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	102	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	93.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	70.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	94.8	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	93.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	93.6	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	90.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	105	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	110	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92.9	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>					
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	105	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	109	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	134



Sub-Matrix: **SOIL**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518) - continued</b>							
ES2219107-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	94.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	73.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	92.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	79.6	69.2	143

**CHAIN OF CUSTODY**  
 (ALS) COC#: 38192 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY: *P. Turner*

DATE TIME: 2/6/22 19:30

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT046_220527		27/05/2022 10:42 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2219411**



Telephone : + 61-2-8784 8555



# CHAIN OF CUSTODY

COC#: 38192 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

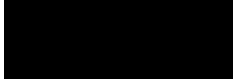
PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT046_220527	HDPE (no PTFE)	20 mL	00350621036858	Grey	No	
001	0908_POT046_220527	HDPE (no PTFE)	20 mL	00350621036440	Grey	No	
001	0908_POT046_220527	HDPE (no PTFE)	20 mL	00350621036497	Grey	No	


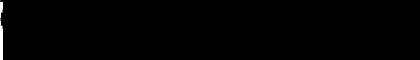
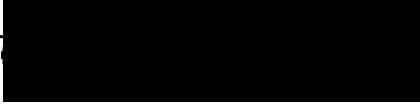
**Total Bottle Count: ALS: 3, Non ALS: 0**





ALS Use Only

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager:   
 Phone:   
 ALS Compass COC Reference: See instructions Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone:   
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<p>Special Instructions:</p> <p>ES221941 37861 - <del>ES221941</del> 38358 ES2219413          ES221942 37864 - 38197 ES2219412          ES221943 38180 - 38192 ES2219411</p>	<p>ALS Use Only</p> <p>Custody seal intact? YES NO <u>N/A</u>  <u>Free</u> ice / frozen ice bricks upon receipt? <u>YES</u> NO N/A          Random sample temperature on receipt? <u>2.3</u> °C</p>
--	---

<p>Relinquished by:</p> <p><u>AM</u></p> <p>Date / Time:</p> <p><u>2.6.22 4:42</u></p>	<p>Received by:</p> <p><u>TOB</u></p> <p>Date / Time:</p> <p><u>2/6/22 4:44 pm.</u></p>	<p>Relinquished by:</p> <p><u>KS</u></p> <p>Date / Time:</p> <p><u>2/6/22</u></p>	<p>Received by:</p> <p>_____</p> <p>Date / Time:</p> <p>_____</p>
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**MAILED**

LAB USE ONLY:  
NEWCASTLE

RP 2/6/22 2:40



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219411

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 38192  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due Date : 09-Jun-2022

Issue Date : 03-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219411-001	27-May-2022 10:42	0908_POT046_220527	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2219411**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 38192  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 02-Jun-2022 16:44  
**Date Analysis Commenced** : 06-Jun-2022  
**Issue Date** : 09-Jun-2022 11:49



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT046\_22052

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Sampling date / time

27-May-2022 10:42

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Compound

CAS Number

LOR

Unit

ES2219411-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.13	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT046\_22052  
7

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Sampling date / time

27-May-2022 10:42

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Compound

CAS Number

LOR

Unit

ES2219411-001

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-----

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.19	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.19	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.19	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	114	----	----	----	----
13C8-PFOA	----	0.02	%	107	----	----	----	----





## Surrogate Control Limits

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219411	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM-R	Issue Date	: 09-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_220527	27-May-2022	08-Jun-2022	23-Nov-2022	✔	08-Jun-2022	23-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_220527	27-May-2022	08-Jun-2022	23-Nov-2022	✔	08-Jun-2022	23-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_220527	27-May-2022	08-Jun-2022	23-Nov-2022	✔	08-Jun-2022	23-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_220527	27-May-2022	08-Jun-2022	23-Nov-2022	✔	08-Jun-2022	23-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_220527	27-May-2022	08-Jun-2022	23-Nov-2022	✔	08-Jun-2022	23-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2219411</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 38192 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 <b>Date Analysis Commenced</b> : 06-Jun-2022 <b>Issue Date</b> : 09-Jun-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385303)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	120	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	104	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	114	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385303)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	110	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	129	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	123	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	126	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	124	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385303)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	123	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	118	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	121	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	124	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	115	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138	





Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385303) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	121	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

**CHAIN OF CUSTODY**

COC#: 38180

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4**SAMPLE DETAILS****ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	ALTERNATIVE ANALYSIS	
001	0908_SW259_220527		27/05/2022 08:21 AM	Soil	ALS: 1 Non ALS: 0	No	X		
002	0908_SD326_220527		27/05/2022 08:25 AM	Soil	ALS: 1 Non ALS: 0	No	X		
003	0908_SD255_220527		27/05/2022 08:30 AM	Soil	ALS: 1 Non ALS: 0	No	X		
004	0908_SD254_220527		27/05/2022 08:35 AM	Soil	ALS: 1 Non ALS: 0	No	X		
005	0908_SD259_220527		27/05/2022 08:21 AM	Soil	ALS: 1 Non ALS: 0	No	X		

Environmental Division  
Sydney  
Work Order Reference  
**ES2219409**



Telephone : +61-2-8784 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY: P Tan

DATE TIME: 2/6/2019 19:50

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

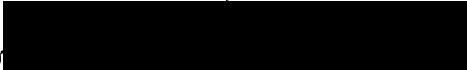
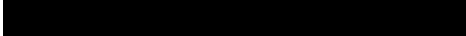
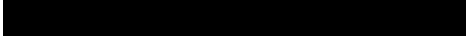
SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW259_220527	HDPE Soil Jar	200 mL	00621019080379	Grey	No	
002	0908_SD326_220527	HDPE Soil Jar	200 mL	00621019080335	Grey	No	
003	0908_SD255_220527	HDPE Soil Jar	200 mL	00621019080341	Grey	No	
004	0908_SD254_220527	HDPE Soil Jar	200 mL	00621019080331	Grey	No	
005	0908_SD259_220527	HDPE Soil Jar	200 mL	00621019080352	Grey	No	

**Total Bottle Count: ALS: 5, Non ALS: 0**



ALS Use Only

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager:   
 Phone:   
 ALS Compass COC Reference: See instructions Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone:   
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<p>Special Instructions:</p> <p>ES2219407 - 37861 - <del>38358</del> ES2219413                  ES2219408 - 37864 - 38197 ES2219412                  ES2219409 - 38180 - 38192 ES2219411</p>	<p>ALS Use Only</p> <p>Custody seal intact? YES NO <u>N/A</u></p> <p><u>Free ice</u> / frozen ice bricks upon receipt? <u>YES</u> NO N/A</p> <p>Random sample temperature on receipt? <u>2-3</u> °C</p>
--	---

<p>Relinquished by:</p> <p><u>AM</u></p> <p>Date / Time:</p> <p><u>2.6.22 4:42</u></p>	<p>Received by:</p> <p><u>TO'B</u></p> <p>Date / Time:</p> <p><u>2/6/22 4:44 pm.</u></p>	<p>Relinquished by:</p> <p><u>KS</u></p> <p>Date / Time:</p> <p><u>2/6/22</u></p>	<p>Received by:</p> <p>Date / Time:</p>
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**EMAILED**

LET OF OMAN:  
DUNCASTLE

RP 2/6/22 2:40



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219409

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 38180  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due Date : 09-Jun-2022

Issue Date : 03-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2219409-002	27-May-2022 08:25	0908_SD326_220527	✓	✓
ES2219409-003	27-May-2022 08:30	0908_SD255_220527	✓	✓
ES2219409-004	27-May-2022 08:35	0908_SD254_220527	✓	✓
ES2219409-005	27-May-2022 08:21	0908_SD259_220527	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219409-001	27-May-2022 08:21	0908_SW259_220527	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



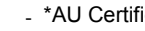
- \*AU Certificate of Analysis - NATA (COA)
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- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
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- EDI Format - ENMRG (ENMRG)
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- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQuIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2219409**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 38180  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 5  
**No. of samples analysed** : 5

**Page** : 1 of 7  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 02-Jun-2022 16:44  
**Date Analysis Commenced** : 06-Jun-2022  
**Issue Date** : 10-Jun-2022 14:54



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD326_220527	0908_SD255_220527	0908_SD254_220527	0908_SD259_220527	----
		Sampling date / time		27-May-2022 08:25	27-May-2022 08:30	27-May-2022 08:35	27-May-2022 08:21	----
Compound	CAS Number	LOR	Unit	ES2219409-002	ES2219409-003	ES2219409-004	ES2219409-005	-----
				Result	Result	Result	Result	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	28.9	46.3	51.2	20.0	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0006	0.0008	0.0030	<0.0002	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0003	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0154	0.0309	0.0276	0.0016	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0006	<0.0002	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0005	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0011	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0008	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.0003	<0.0002	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD326_220527	0908_SD255_220527	0908_SD254_220527	0908_SD259_220527	----
Sampling date / time				27-May-2022 08:25	27-May-2022 08:30	27-May-2022 08:35	27-May-2022 08:35	27-May-2022 08:21	----
Compound	CAS Number	LOR	Unit	ES2219409-002	ES2219409-003	ES2219409-004	ES2219409-005	-----	
				Result	Result	Result	Result	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0160	0.0320	0.0339	0.0016	0.0016	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0160	0.0317	0.0306	0.0016	0.0016	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0160	0.0317	0.0322	0.0016	0.0016	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	97.5	98.0	103	97.5	97.5	----
13C8-PFOA	----	0.0002	%	98.5	96.5	97.0	97.0	97.0	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		0908_SW259_220527	----	----	----	----
		Sampling date / time		27-May-2022 08:21	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219409-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.43	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.85	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID	0908_SW259_220527	----	----	----	----
		Sampling date / time	27-May-2022 08:21	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219409-001	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	1.54	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.28	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.47	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	98.8	----	----	----
13C8-PFOA	----	0.02	%	98.9	----	----	----



## Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219409	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM-R	Issue Date	: 10-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 5
Order number	: 60612562_2.1	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	----	----	----	07-Jun-2022	10-Jun-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD326_220527, 0908_SD254_220527,	0908_SD255_220527, 0908_SD259_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW259_220527		27-May-2022	09-Jun-2022	23-Nov-2022	✓	09-Jun-2022	23-Nov-2022	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_220527	27-May-2022	09-Jun-2022	23-Nov-2022	✓	09-Jun-2022	23-Nov-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_220527	27-May-2022	09-Jun-2022	23-Nov-2022	✓	09-Jun-2022	23-Nov-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_220527	27-May-2022	09-Jun-2022	23-Nov-2022	✓	09-Jun-2022	23-Nov-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_220527	27-May-2022	09-Jun-2022	23-Nov-2022	✓	09-Jun-2022	23-Nov-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2219409</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 38180 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 5 <b>No. of samples analysed</b> : 5	<b>Page</b> : 1 of 10  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 <b>Date Analysis Commenced</b> : 06-Jun-2022 <b>Issue Date</b> : 10-Jun-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
<span style="background-color: black; color: black;">[REDACTED]</span>	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4384432)</b>									
ES2219409-002	0908_SD326_220527	EA055: Moisture Content	----	0.1	%	28.9	28.3	1.9	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518)</b>									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4387181)</b>									
ES2219366-010	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4387181)</b>									
ES2219366-010	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4387181)</b>									
ES2219366-010	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4387181) - continued</b>									
ES2219366-010	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4387181)</b>									
ES2219366-010	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4387181)</b>									
ES2219366-010	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.5	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.5	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.8	65.0	137



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.6	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4387181)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	91.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	94.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4387181)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4387181)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	79.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.0	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4387181)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.8	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4387181) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	89.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	89.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	83.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	102	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	93.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	70.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	94.8	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	93.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	93.6	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	90.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	105	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	110	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92.9	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>					
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	105	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	109	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518) - continued</b>							
ES2219107-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	94.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	73.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	92.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	79.6	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4387181)</b>							
ES2219366-010	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	87.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	90.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	96.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	94.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4387181)</b>							
ES2219366-010	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	80.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	97.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	94.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	98.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	103	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	113	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.6	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	100	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.6	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4387181)</b>							
ES2219366-010	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	112	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	82.5	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	91.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4387181) - continued</b>							
ES2219366-010	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	93.0	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4387181)</b>							
ES2219366-010	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	97.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	89.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	77.0	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.2	71.4	144

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SS\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SS109_220527		27/05/2022 10:10 AM	Soil	ALS: 1 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2219408**



Telephone : + 61-2-8764 8555

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37864 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM\_SS\_2  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

*P. Tran*  
 2/6/22 19:30

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SS109_220527	HDPE Soil Jar	200 mL	00620719055161	Grey	No	

Total Bottle Count: ALS: 1, Non ALS: 0






ALS Use Only

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 ALS Compass COC Reference: See instructions # Samples: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<b>Special Instructions:</b> ES2219407-37861 - <del>ES2219413</del> 38358 ES2219413 ES2219408-37864 - 38197 ES2219412 ES2219409-38180 - 38192 ES2219411	<b>ALS Use Only</b> Custody seal intact? YES NO <u>N/A</u> Free ice / frozen ice bricks upon receipt? <u>YES</u> NO N/A Random sample temperature on receipt? 2.3 °C
--	---

<b>Custody:</b>			
Relinquished by:  Date / Time: 2.6.22 4:42	Received by: TO'B Date / Time: 2/6/22 4:44 pm.	Relinquished by:  2/6/22 Date / Time: 	Received by:  Date / Time:

**MAILED**

LET OF OFFICE:  
 BENCARTLE

RP 2/6/22 2:40





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219408

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37864

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : WLM\_SS\_2

Sampler : [REDACTED]

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due : 09-Jun-2022  
Date

Issue Date : 03-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2219408-001	27-May-2022 10:10	0908_SS109_220527	✓	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
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- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQuIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2219408**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37864  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM\_SS\_2  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 02-Jun-2022 16:44  
**Date Analysis Commenced** : 07-Jun-2022  
**Issue Date** : 10-Jun-2022 14:53



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
∅ = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID			0908_SS109_220527	----	----	----	----
		Sampling date / time			27-May-2022 10:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2219408-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	24.3	----	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0012	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	0908_SS109_220527	----	----	----	----
Sampling date / time			27-May-2022 10:10	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2219408-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0012	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0012	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0012	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	94.0	----	----	----	----
13C8-PFOA	----	0.0002	%	97.5	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219408	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM_SS_2	Issue Date	: 10-Jun-2022
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SS109_220527	27-May-2022	----	----	----	07-Jun-2022	10-Jun-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SS109_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SS109_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SS109_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SS109_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SS109_220527	27-May-2022	07-Jun-2022	23-Nov-2022	✓	07-Jun-2022	17-Jul-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	8	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2219408</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37864 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_SS_2 <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 <b>Date Analysis Commenced</b> : 07-Jun-2022 <b>Issue Date</b> : 10-Jun-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4384432)</b>									
ES2219409-002	Anonymous	EA055: Moisture Content	----	0.1	%	28.9	28.3	1.9	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4382518)</b>									
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518)</b>									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4382518) - continued</b>									
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2219107-021	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.5	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.5	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.0	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.8	65.0	137



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.6	69.2	143

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	89.2	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	89.2	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	83.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	102	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	93.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	70.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	94.8	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	93.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	93.6	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	98.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	90.8	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	105	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	110	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92.9	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	89.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	105	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	102	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	109	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	94.8	63.0	144



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4382518) - continued</b>							
ES2219107-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	89.2	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4382518)</b>							
ES2219107-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	73.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	92.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	79.6	69.2	143

RELINQUISHED BY:

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DATE TIME:

DATE TIME: *Tam*  
2/6/22 19:30

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS

ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW106D_220524		24/05/2022 09:00 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW106S_220524		24/05/2022 09:06 AM	Water	ALS: 3 Non ALS: 0	No	X		
003	0908_MW126D_220531		31/05/2022 01:12 PM	Water	ALS: 3 Non ALS: 0	No	X		
004	0908_MW126S_220531		31/05/2022 01:19 PM	Water	ALS: 3 Non ALS: 0	No	X		
005	0908_MW130D_220601		01/06/2022 10:10 AM	Water	ALS: 3 Non ALS: 0	No	X		
006	0908_MW132D_220530		30/05/2022 12:00 PM	Water	ALS: 3 Non ALS: 0	No	X		
007	0908_MW132S_220530		30/05/2022 01:52 PM	Water	ALS: 3 Non ALS: 0	No	X		
008	0908_MW134D_220530		30/05/2022 11:49 AM	Water	ALS: 3 Non ALS: 0	No	X		
009	0908_MW134I_220530		30/05/2022 11:41 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2219407**



Telephone : - 61-2-8784 8555

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER

PRIMARY SAMPLER

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0908_MW137_220524		24/05/2022 03:37 PM	Water	ALS: 3 Non ALS: 0	No	X		
011	0908_MW146AD_220531		31/05/2022 12:32 PM	Water	ALS: 3 Non ALS: 0	No	X		
012	0908_MW156D_220524		24/05/2022 10:50 AM	Water	ALS: 3 Non ALS: 0	No	X		
013	0908_MW158D_220601		01/06/2022 10:49 AM	Water	ALS: 3 Non ALS: 0	No	X		
014	0908_MW158S_220601		01/06/2022 10:56 AM	Water	ALS: 3 Non ALS: 0	No	X		
015	0908_MW159D_220601		01/06/2022 09:29 AM	Water	ALS: 3 Non ALS: 0	No	X		
016	0908_MW159S_220601		01/06/2022 09:23 AM	Water	ALS: 3 Non ALS: 0	No	X		
017	0908_MW160_220531		31/05/2022 08:54 AM	Water	ALS: 3 Non ALS: 0	No	X		
018	0908_MW161D_220601		01/06/2022 11:41 AM	Water	ALS: 3 Non ALS: 0	No	X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_MW161S_220601		01/06/2022 11:39 AM	Water	ALS: 3 Non ALS: 0	No	X		
020	0908_MW166_220525		25/05/2022 02:14 PM	Water	ALS: 3 Non ALS: 0	No	X		
021	0908_MW167_220525		25/05/2022 12:54 PM	Water	ALS: 3 Non ALS: 0	No	X		
022	0908_MW168_220526		26/05/2022 12:24 PM	Water	ALS: 3 Non ALS: 0	No	X		
023	0908_MW178_220601		01/06/2022 02:21 PM	Water	ALS: 3 Non ALS: 0	No	X		
024	0908_MW188S_220531		31/05/2022 01:44 PM	Water	ALS: 3 Non ALS: 0	No	X		
025	0908_MW196_220530		30/05/2022 09:26 AM	Water	ALS: 3 Non ALS: 0	No	X		
026	0908_MW198_220530		30/05/2022 08:56 AM	Water	ALS: 3 Non ALS: 0	No	X		
027	0908_MW200_220530		30/05/2022 09:12 AM	Water	ALS: 3 Non ALS: 0	No	X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0908_MW201D_220530		30/05/2022 08:40 AM	Water	ALS: 3 Non ALS: 0	No	X		
029	0908_MW201S_220530		30/05/2022 08:24 AM	Water	ALS: 3 Non ALS: 0	No	X		
030	0908_MW208_220524		24/05/2022 01:33 PM	Water	ALS: 3 Non ALS: 0	No	X		
031	0908_MW209D_220524		24/05/2022 11:20 AM	Water	ALS: 3 Non ALS: 0	No	X		
032	0908_MW209S_220524		24/05/2022 11:30 AM	Water	ALS: 3 Non ALS: 0	No	X		
033	0908_MW210D_220524		24/05/2022 12:35 PM	Water	ALS: 3 Non ALS: 0	No	X		
034	0908_MW210S_220524		24/05/2022 12:36 PM	Water	ALS: 3 Non ALS: 0	No	X		
035	0908_MW212_220524		24/05/2022 11:59 AM	Water	ALS: 3 Non ALS: 0	No	X		
036	0908_MW240D_220526		26/05/2022 10:25 AM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:

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RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_MW241D_220524		24/05/2022 02:46 PM	Water	ALS: 3 Non ALS: 0	No	X		
038	0908_MW241S_220524		24/05/2022 02:42 PM	Water	ALS: 3 Non ALS: 0	No	X		
039	0908_MW244D_220530		30/05/2022 09:46 AM	Water	ALS: 3 Non ALS: 0	No	X		
040	0908_MW244S_220530		30/05/2022 09:57 AM	Water	ALS: 3 Non ALS: 0	No	X		
041	0908_MW245D_220530		30/05/2022 11:10 AM	Water	ALS: 3 Non ALS: 0	No	X		
042	0908_MW245S_220530		30/05/2022 11:16 AM	Water	ALS: 3 Non ALS: 0	No	X		
043	0908_MW264D_220602		02/06/2022 08:51 AM	Water	ALS: 3 Non ALS: 0	No	X		
044	0908_MW264S_220602		02/06/2022 08:57 AM	Water	ALS: 3 Non ALS: 0	No	X		
045	0908_MW281S_220526		26/05/2022 10:02 AM	Water	ALS: 3 Non ALS: 0	No	X		



**CHAIN OF CUSTODY**

COC#: 37861

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

**SAMPLE DETAILS****ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0908_MW282S_220526		26/05/2022 10:13 AM	Water	ALS: 3 Non ALS: 0	No	X		
047	0908_MW315D_220526		26/05/2022 03:31 PM	Water	ALS: 3 Non ALS: 0	No	X		
048	0908_MW315S_220526		26/05/2022 03:36 PM	Water	ALS: 3 Non ALS: 0	No	X		
049	0908_MW316D_220520		20/05/2022 10:26 AM	Water	ALS: 3 Non ALS: 0	No	X		
050	0908_MW317D_220530		30/05/2022 12:10 AM	Water	ALS: 3 Non ALS: 0	No	X		
051	0908_MW317S_220530		30/05/2022 12:18 PM	Water	ALS: 3 Non ALS: 0	No	X		
052	0908_MW318D_220531		31/05/2022 09:48 AM	Water	ALS: 3 Non ALS: 0	No	X		
053	0908_MW318S_220531		31/05/2022 09:24 AM	Water	ALS: 3 Non ALS: 0	No	X		
054	0908_MW406_220524		24/05/2022 09:40 AM	Water	ALS: 3 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

ALS COC#: 37861 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

## LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

## SAMPLE DETAILS

## ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0908_MW433_220524		24/05/2022 10:52 AM	Water	ALS: 3 Non ALS: 0	No	X		
056	0908_MW829_220530		30/05/2022 02:22 PM	Water	ALS: 3 Non ALS: 0	No	X		
057	0908_MW842_220602		02/06/2022 09:39 AM	Water	ALS: 3 Non ALS: 0	No	X		
058	0908_MW844_220602		02/06/2022 09:51 AM	Water	ALS: 3 Non ALS: 0	No	X		
059	0908_QC113_220524		24/05/2022 09:40 AM	Water	ALS: 3 Non ALS: 0	No	X		
060	0908_QC114_220524		24/05/2022 12:35 PM	Water	ALS: 3 Non ALS: 0	No	X		
061	0908_QC115_220526		26/05/2022 10:13 AM	Water	ALS: 3 Non ALS: 0	No	X		
062	0908_QC116_220526		26/05/2022 03:31 PM	Water	ALS: 3 Non ALS: 0	No	X		
063	0908_QC117_220530		30/05/2022 08:56 AM	Water	ALS: 3 Non ALS: 0	No	X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0908_QC118_220530		30/05/2022 01:52 PM	Water	ALS: 3 Non ALS: 0	No	X		
065	0908_QC119_220531		31/05/2022 08:54 AM	Water	ALS: 3 Non ALS: 0	No	X		
066	0908_QC120_220801		01/06/2022 10:49 AM	Water	ALS: 3 Non ALS: 0	No	X		
067	0908_QC121_220802		02/06/2022 08:57 AM	Water	ALS: 3 Non ALS: 0	No	X		
068	0908_QC307_220520		20/05/2022 04:18 PM	Water	ALS: 3 Non ALS: 0	No	X		
069	0908_QC308_220523		23/05/2022 04:20 PM	Water	ALS: 3 Non ALS: 0	No	X		
070	0908_QC309_220524		24/05/2022 04:21 PM	Water	ALS: 3 Non ALS: 0	No	X		
071	0908_QC310_220525		25/05/2022 04:22 PM	Water	ALS: 3 Non ALS: 0	No	X		
072	0908_QC311_220526		26/05/2022 04:23 PM	Water	ALS: 3 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

COC#: 37861 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
073	0908_QC312_220527		27/05/2022 04:25 PM	Water	ALS: 3 Non ALS: 0	No	X		
074	0908_QC313_220530		30/05/2022 04:26 PM	Water	ALS: 3 Non ALS: 0	No	X		
075	0908_QC314_220531		31/05/2022 04:27 PM	Water	ALS: 3 Non ALS: 0	No	X		
076	0908_QC315_220601		01/06/2022 04:24 PM	Water	ALS: 3 Non ALS: 0	No	X		
077	0908_QC316_220602		02/06/2022 03:10 PM	Water	ALS: 3 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

ALS COC#: 37861 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW106D_220524	HDPE (no PTFE)	20 mL	00350621036916	Grey	No	
001	0908_MW106D_220524	HDPE (no PTFE)	20 mL	00350621036790	Grey	No	
001	0908_MW106D_220524	HDPE (no PTFE)	20 mL	00350621036924	Grey	No	
002	0908_MW106S_220524	HDPE (no PTFE)	20 mL	00350621036583	Grey	No	
002	0908_MW106S_220524	HDPE (no PTFE)	20 mL	00350621036442	Grey	No	
002	0908_MW106S_220524	HDPE (no PTFE)	20 mL	00350621036919	Grey	No	
003	0908_MW126D_220531	HDPE (no PTFE)	20 mL	00352101023375	Grey	No	
003	0908_MW126D_220531	HDPE (no PTFE)	20 mL	00350621057677	Grey	No	
003	0908_MW126D_220531	HDPE (no PTFE)	20 mL	00352101023356	Grey	No	
004	0908_MW126S_220531	HDPE (no PTFE)	20 mL	00350621057726	Grey	No	
004	0908_MW126S_220531	HDPE (no PTFE)	20 mL	00350621031965	Grey	No	
004	0908_MW126S_220531	HDPE (no PTFE)	20 mL	00350621032040	Grey	No	
005	0908_MW130D_220601	HDPE (no PTFE)	20 mL	00350621036306	Grey	No	
005	0908_MW130D_220601	HDPE (no PTFE)	20 mL	00350621036404	Grey	No	
005	0908_MW130D_220601	HDPE (no PTFE)	20 mL	00350621036301	Grey	No	
006	0908_MW132D_220530	HDPE (no PTFE)	20 mL	00350621036712	Grey	No	
006	0908_MW132D_220530	HDPE (no PTFE)	20 mL	00350621036659	Grey	No	
006	0908_MW132D_220530	HDPE (no PTFE)	20 mL	00350621036676	Grey	No	
007	0908_MW132S_220530	HDPE (no PTFE)	20 mL	00350621036869	Grey	No	
007	0908_MW132S_220530	HDPE (no PTFE)	20 mL	00350621036815	Grey	No	
007	0908_MW132S_220530	HDPE (no PTFE)	20 mL	00350621036922	Grey	No	
008	0908_MW134D_220530	HDPE (no PTFE)	20 mL	00350621036870	Grey	No	
008	0908_MW134D_220530	HDPE (no PTFE)	20 mL	00350621036923	Grey	No	
008	0908_MW134D_220530	HDPE (no PTFE)	20 mL	00350621036877	Grey	No	
009	0908_MW134I_220530	HDPE (no PTFE)	20 mL	00350621036731	Grey	No	
009	0908_MW134I_220530	HDPE (no PTFE)	20 mL	00350621036943	Grey	No	

**CHAIN OF CUSTODY**

COC#: 37861

ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

009	0908_MW134I_220530	HDPE (no PTFE)	20 mL	00350621036490	Grey	No	
010	0908_MW137_220524	HDPE (no PTFE)	20 mL	00350621036872	Grey	No	
010	0908_MW137_220524	HDPE (no PTFE)	20 mL	00350621036697	Grey	No	
010	0908_MW137_220524	HDPE (no PTFE)	20 mL	00350621036599	Grey	No	
011	0908_MW146AD_220531	HDPE (no PTFE)	20 mL	00352010048169	Grey	No	
011	0908_MW146AD_220531	HDPE (no PTFE)	20 mL	00352101023360	Grey	No	
011	0908_MW146AD_220531	HDPE (no PTFE)	20 mL	00352101023281	Grey	No	
012	0908_MW156D_220524	HDPE (no PTFE)	20 mL	00350621036471	Grey	No	
012	0908_MW156D_220524	HDPE (no PTFE)	20 mL	00350621036477	Grey	No	
012	0908_MW156D_220524	HDPE (no PTFE)	20 mL	00350621036582	Grey	No	
013	0908_MW158D_220601	HDPE (no PTFE)	20 mL	00350621036272	Grey	No	
013	0908_MW158D_220601	HDPE (no PTFE)	20 mL	00350621057672	Grey	No	
013	0908_MW158D_220601	HDPE (no PTFE)	20 mL	00350621031835	Grey	No	
014	0908_MW158S_220601	HDPE (no PTFE)	20 mL	00350621036345	Grey	No	
014	0908_MW158S_220601	HDPE (no PTFE)	20 mL	00350621057904	Grey	No	
014	0908_MW158S_220601	HDPE (no PTFE)	20 mL	00350621036348	Grey	No	
015	0908_MW159D_220601	HDPE (no PTFE)	20 mL	00352010028560	Grey	No	
015	0908_MW159D_220601	HDPE (no PTFE)	20 mL	00350621031957	Grey	No	
015	0908_MW159D_220601	HDPE (no PTFE)	20 mL	00352010048005	Grey	No	
016	0908_MW159S_220601	HDPE (no PTFE)	20 mL	00352010050451	Grey	No	
016	0908_MW159S_220601	HDPE (no PTFE)	20 mL	00350621031751	Grey	No	
016	0908_MW159S_220601	HDPE (no PTFE)	20 mL	00352010050452	Grey	No	
017	0908_MW160_220531	HDPE (no PTFE)	20 mL	00350621036600	Grey	No	
017	0908_MW160_220531	HDPE (no PTFE)	20 mL	00350621037019	Grey	No	
017	0908_MW160_220531	HDPE (no PTFE)	20 mL	00350621036996	Grey	No	
018	0908_MW161D_220601	HDPE (no PTFE)	20 mL	00350621034243	Grey	No	
018	0908_MW161D_220601	HDPE (no PTFE)	20 mL	00352010028707	Grey	No	



# CHAIN OF CUSTODY

COC#: 37861

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

018	0908_MW161D_220601	HDPE (no PTFE)	20 mL	00350621034237	Grey	No	
019	0908_MW161S_220601	HDPE (no PTFE)	20 mL	00350621031750	Grey	No	
019	0908_MW161S_220601	HDPE (no PTFE)	20 mL	00350621031769	Grey	No	
019	0908_MW161S_220601	HDPE (no PTFE)	20 mL	00350621031748	Grey	No	
020	0908_MW166_220525	HDPE (no PTFE)	20 mL	00350621036664	Grey	No	
020	0908_MW166_220525	HDPE (no PTFE)	20 mL	00350621036974	Grey	No	
020	0908_MW166_220525	HDPE (no PTFE)	20 mL	00350621036884	Grey	No	
021	0908_MW167_220525	HDPE (no PTFE)	20 mL	00350621036782	Grey	No	
021	0908_MW167_220525	HDPE (no PTFE)	20 mL	00350621036652	Grey	No	
021	0908_MW167_220525	HDPE (no PTFE)	20 mL	00350621036989	Grey	No	
022	0908_MW168_220526	HDPE (no PTFE)	20 mL	00350621036684	Grey	No	
022	0908_MW168_220526	HDPE (no PTFE)	20 mL	00350621036883	Grey	No	
022	0908_MW168_220526	HDPE (no PTFE)	20 mL	00350621036953	Grey	No	
023	0908_MW178_220601	HDPE (no PTFE)	20 mL	00352010028758	Grey	No	
023	0908_MW178_220601	HDPE (no PTFE)	20 mL	00352010048077	Grey	No	
023	0908_MW178_220601	HDPE (no PTFE)	20 mL	00350621057544	Grey	No	
024	0908_MW188S_220531	HDPE (no PTFE)	20 mL	00352010050450	Grey	No	
024	0908_MW188S_220531	HDPE (no PTFE)	20 mL	00362010048116	Grey	No	
024	0908_MW188S_220531	HDPE (no PTFE)	20 mL	00352010028750	Grey	No	
025	0908_MW196_220530	HDPE (no PTFE)	20 mL	00350621036831	Grey	No	
025	0908_MW196_220530	HDPE (no PTFE)	20 mL	00350621036842	Grey	No	
025	0908_MW196_220530	HDPE (no PTFE)	20 mL	00350621036956	Grey	No	
026	0908_MW198_220530	HDPE (no PTFE)	20 mL	00350621036893	Grey	No	
026	0908_MW198_220530	HDPE (no PTFE)	20 mL	00350621036552	Grey	No	
026	0908_MW198_220530	HDPE (no PTFE)	20 mL	00350621036915	Grey	No	
027	0908_MW200_220530	HDPE (no PTFE)	20 mL	00350621036827	Grey	No	
027	0908_MW200_220530	HDPE (no PTFE)	20 mL	00350621036929	Grey	No	

**CHAIN OF CUSTODY**

COC#: 37861

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

027	0908_MW200_220530	HDPE (no PTFE)	20 mL	00350621036821	Grey	No	
028	0908_MW201D_220530	HDPE (no PTFE)	20 mL	00350621036835	Grey	No	
028	0908_MW201D_220530	HDPE (no PTFE)	20 mL	00350621036667	Grey	No	
028	0908_MW201D_220530	HDPE (no PTFE)	20 mL	00350621036691	Grey	No	
029	0908_MW201S_220530	HDPE (no PTFE)	20 mL	00350621036694	Grey	No	
029	0908_MW201S_220530	HDPE (no PTFE)	20 mL	00350621036478	Grey	No	
029	0908_MW201S_220530	HDPE (no PTFE)	20 mL	00350621036652	Grey	No	
030	0908_MW208_220524	HDPE (no PTFE)	20 mL	00350621036955	Grey	No	
030	0908_MW208_220524	HDPE (no PTFE)	20 mL	00350621036846	Grey	No	
030	0908_MW208_220524	HDPE (no PTFE)	20 mL	00350621036695	Grey	No	
031	0908_MW209D_220524	HDPE (no PTFE)	20 mL	00350621036499	Grey	No	
031	0908_MW209D_220524	HDPE (no PTFE)	20 mL	00350621037020	Grey	No	
031	0908_MW209D_220524	HDPE (no PTFE)	20 mL	00350621036502	Grey	No	
032	0908_MW209S_220524	HDPE (no PTFE)	20 mL	00350621036802	Grey	No	
032	0908_MW209S_220524	HDPE (no PTFE)	20 mL	00350621036629	Grey	No	
032	0908_MW209S_220524	HDPE (no PTFE)	20 mL	00350621036744	Grey	No	
033	0908_MW210D_220524	HDPE (no PTFE)	20 mL	00350621036505	Grey	No	
033	0908_MW210D_220524	HDPE (no PTFE)	20 mL	00350621036560	Grey	No	
033	0908_MW210D_220524	HDPE (no PTFE)	20 mL	00350621036459	Grey	No	
034	0908_MW210S_220524	HDPE (no PTFE)	20 mL	00350621036908	Grey	No	
034	0908_MW210S_220524	HDPE (no PTFE)	20 mL	00350621036546	Grey	No	
034	0908_MW210S_220524	HDPE (no PTFE)	20 mL	00350621036964	Grey	No	
035	0908_MW212_220524	HDPE (no PTFE)	20 mL	00350621036658	Grey	No	
035	0908_MW212_220524	HDPE (no PTFE)	20 mL	00350621036640	Grey	No	
035	0908_MW212_220524	HDPE (no PTFE)	20 mL	00350621036742	Grey	No	
036	0908_MW240D_220526	HDPE (no PTFE)	20 mL	00350621036706	Grey	No	
036	0908_MW240D_220526	HDPE (no PTFE)	20 mL	00350621036917	Grey	No	



**CHAIN OF CUSTODY**

COC#: 37861

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

036	0908_MW240D_220528	HDPE (no PTFE)	20 mL	00350621036543	Grey	No	
037	0908_MW241D_220524	HDPE (no PTFE)	20 mL	00350621036564	Grey	No	
037	0908_MW241D_220524	HDPE (no PTFE)	20 mL	00350621036454	Grey	No	
037	0908_MW241D_220524	HDPE (no PTFE)	20 mL	00350621036590	Grey	No	
038	0908_MW241S_220524	HDPE (no PTFE)	20 mL	00350621036888	Grey	No	
038	0908_MW241S_220524	HDPE (no PTFE)	20 mL	00350621036503	Grey	No	
038	0908_MW241S_220524	HDPE (no PTFE)	20 mL	00350621036550	Grey	No	
039	0908_MW244D_220530	HDPE (no PTFE)	20 mL	00350621036705	Grey	No	
039	0908_MW244D_220530	HDPE (no PTFE)	20 mL	00350621036979	Grey	No	
039	0908_MW244D_220530	HDPE (no PTFE)	20 mL	00350621036865	Grey	No	
040	0908_MW244S_220530	HDPE (no PTFE)	20 mL	00350621036848	Grey	No	
040	0908_MW244S_220530	HDPE (no PTFE)	20 mL	00350621036976	Grey	No	
040	0908_MW244S_220530	HDPE (no PTFE)	20 mL	00350621036982	Grey	No	
041	0908_MW245D_220530	HDPE (no PTFE)	20 mL	00350621036666	Grey	No	
041	0908_MW245D_220530	HDPE (no PTFE)	20 mL	00350621036999	Grey	No	
041	0908_MW245D_220530	HDPE (no PTFE)	20 mL	00350621036513	Grey	No	
042	0908_MW245S_220530	HDPE (no PTFE)	20 mL	00350621038730	Grey	No	
042	0908_MW245S_220530	HDPE (no PTFE)	20 mL	00350621036611	Grey	No	
042	0908_MW245S_220530	HDPE (no PTFE)	20 mL	00350621036700	Grey	No	
043	0908_MW264D_220602	HDPE (no PTFE)	20 mL	00350621034135	Grey	No	
043	0908_MW264D_220602	HDPE (no PTFE)	20 mL	00350621031766	Grey	No	
043	0908_MW264D_220602	HDPE (no PTFE)	20 mL	00350621031710	Grey	No	
044	0908_MW264S_220602	HDPE (no PTFE)	20 mL	00350621036918	Grey	No	
044	0908_MW264S_220602	HDPE (no PTFE)	20 mL	00350621036733	Grey	No	
044	0908_MW264S_220602	HDPE (no PTFE)	20 mL	00350621034259	Grey	No	
045	0908_MW281S_220526	HDPE (no PTFE)	20 mL	00350621036698	Grey	No	
045	0908_MW281S_220526	HDPE (no PTFE)	20 mL	00350621036481	Grey	No	



# CHAIN OF CUSTODY

COC#: 37861 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

045	0908_MW281S_220526	HDPE (no PTFE)	20 mL	00350621036736	Grey	No	
046	0908_MW282S_220526	HDPE (no PTFE)	20 mL	00350621036825	Grey	No	
046	0908_MW282S_220526	HDPE (no PTFE)	20 mL	00350621036795	Grey	No	
046	0908_MW282S_220526	HDPE (no PTFE)	20 mL	00350621036605	Grey	No	
047	0908_MW315D_220526	HDPE (no PTFE)	20 mL	00350621036746	Grey	No	
047	0908_MW315D_220526	HDPE (no PTFE)	20 mL	00350621037014	Grey	No	
047	0908_MW315D_220526	HDPE (no PTFE)	20 mL	00350621036851	Grey	No	
048	0908_MW315S_220526	HDPE (no PTFE)	20 mL	00350621036646	Grey	No	
048	0908_MW315S_220526	HDPE (no PTFE)	20 mL	00350621036820	Grey	No	
048	0908_MW315S_220526	HDPE (no PTFE)	20 mL	00350621036651	Grey	No	
049	0908_MW316D_220520	HDPE (no PTFE)	20 mL	00350621036491	Grey	No	
049	0908_MW316D_220520	HDPE (no PTFE)	20 mL	00350621036476	Grey	No	
049	0908_MW316D_220520	HDPE (no PTFE)	20 mL	00350621036860	Grey	No	
050	0908_MW317D_220530	HDPE (no PTFE)	20 mL	00350621036990	Grey	No	
050	0908_MW317D_220530	HDPE (no PTFE)	20 mL	00350621036500	Grey	No	
050	0908_MW317D_220530	HDPE (no PTFE)	20 mL	00350621037002	Grey	No	
051	0908_MW317S_220530	HDPE (no PTFE)	20 mL	00350621036764	Grey	No	
051	0908_MW317S_220530	HDPE (no PTFE)	20 mL	00350621036765	Grey	No	
051	0908_MW317S_220530	HDPE (no PTFE)	20 mL	00350621036637	Grey	No	
052	0908_MW318D_220531	HDPE (no PTFE)	20 mL	00350621057608	Grey	No	
052	0908_MW318D_220531	HDPE (no PTFE)	20 mL	00350621057733	Grey	No	
052	0908_MW318D_220531	HDPE (no PTFE)	20 mL	00350621034257	Grey	No	
053	0908_MW318S_220531	HDPE (no PTFE)	20 mL	00350621036678	Grey	No	
053	0908_MW318S_220531	HDPE (no PTFE)	20 mL	00350621036962	Grey	No	
053	0908_MW318S_220531	HDPE (no PTFE)	20 mL	00350621036766	Grey	No	
054	0908_MW406_220524	HDPE (no PTFE)	20 mL	00350621036834	Grey	No	
054	0908_MW406_220524	HDPE (no PTFE)	20 mL	00350621036557	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM\_MW\_2  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

054	0908_MW406_220524	HDPE (no PTFE)	20 mL	00350621036518	Grey	No	
055	0908_MW433_220524	HDPE (no PTFE)	20 mL	00350621036722	Grey	No	
055	0908_MW433_220524	HDPE (no PTFE)	20 mL	00350621036804	Grey	No	
055	0908_MW433_220524	HDPE (no PTFE)	20 mL	00350621036524	Grey	No	
056	0908_MW829_220530	HDPE (no PTFE)	20 mL	00350621036568	Grey	No	
056	0908_MW829_220530	HDPE (no PTFE)	20 mL	00350621036719	Grey	No	
056	0908_MW829_220530	HDPE (no PTFE)	20 mL	00350621036443	Grey	No	
057	0908_MW842_220602	HDPE (no PTFE)	20 mL	00352010028728	Grey	No	
057	0908_MW842_220602	HDPE (no PTFE)	20 mL	00352010028490	Grey	No	
057	0908_MW842_220602	HDPE (no PTFE)	20 mL	00350621036823	Grey	No	
058	0908_MW844_220602	HDPE (no PTFE)	20 mL	00350621057880	Grey	No	
058	0908_MW844_220602	HDPE (no PTFE)	20 mL	00350621057786	Grey	No	
058	0908_MW844_220602	HDPE (no PTFE)	20 mL	00350621036861	Grey	No	
059	0908_QC113_220524	HDPE (no PTFE)	20 mL	00350621036749	Grey	No	
059	0908_QC113_220524	HDPE (no PTFE)	20 mL	00350621036501	Grey	No	
059	0908_QC113_220524	HDPE (no PTFE)	20 mL	00350621036906	Grey	No	
060	0908_QC114_220524	HDPE (no PTFE)	20 mL	00350621036461	Grey	No	
060	0908_QC114_220524	HDPE (no PTFE)	20 mL	00350621036496	Grey	No	
060	0908_QC114_220524	HDPE (no PTFE)	20 mL	00350621036745	Grey	No	
061	0908_QC115_220526	HDPE (no PTFE)	20 mL	00350621036439	Grey	No	
061	0908_QC115_220526	HDPE (no PTFE)	20 mL	00350621036767	Grey	No	
061	0908_QC115_220526	HDPE (no PTFE)	20 mL	00350621036593	Grey	No	
062	0908_QC116_220526	HDPE (no PTFE)	20 mL	00350621036654	Grey	No	
062	0908_QC116_220526	HDPE (no PTFE)	20 mL	00350621036897	Grey	No	
062	0908_QC116_220526	HDPE (no PTFE)	20 mL	00350621036948	Grey	No	
063	0908_QC117_220530	HDPE (no PTFE)	20 mL	00350621036735	Grey	No	
063	0908_QC117_220530	HDPE (no PTFE)	20 mL	00350621036840	Grey	No	

**CHAIN OF CUSTODY**

COCH#: 37861

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

063	0908_QC117_220530	HDPE (no PTFE)	20 mL	00350621036619	Grey	No	
064	0908_QC118_220530	HDPE (no PTFE)	20 mL	00350621036639	Grey	No	
064	0908_QC118_220530	HDPE (no PTFE)	20 mL	00350621036898	Grey	No	
064	0908_QC118_220530	HDPE (no PTFE)	20 mL	00350621036626	Grey	No	
065	0908_QC119_220531	HDPE (no PTFE)	20 mL	00350621036716	Grey	No	
065	0908_QC119_220531	HDPE (no PTFE)	20 mL	00350621036826	Grey	No	
065	0908_QC119_220531	HDPE (no PTFE)	20 mL	00350621036947	Grey	No	
066	0908_QC120_220601	HDPE (no PTFE)	20 mL	00352010048084	Grey	No	
066	0908_QC120_220601	HDPE (no PTFE)	20 mL	00352010028720	Grey	No	
066	0908_QC120_220601	HDPE (no PTFE)	20 mL	00350621036377	Grey	No	
067	0908_QC121_220602	HDPE (no PTFE)	20 mL	00352010028610	Grey	No	
067	0908_QC121_220602	HDPE (no PTFE)	20 mL	00352010028577	Grey	No	
067	0908_QC121_220602	HDPE (no PTFE)	20 mL	00352010028464	Grey	No	
068	0908_QC307_220520	HDPE (no PTFE)	20 mL	00350621036796	Grey	No	
068	0908_QC307_220520	HDPE (no PTFE)	20 mL	00350621036581	Grey	No	
068	0908_QC307_220520	HDPE (no PTFE)	20 mL	00350621036615	Grey	No	
069	0908_QC308_220523	HDPE (no PTFE)	20 mL	00350621036950	Grey	No	
069	0908_QC308_220523	HDPE (no PTFE)	20 mL	00350621036880	Grey	No	
069	0908_QC308_220523	HDPE (no PTFE)	20 mL	00350621036595	Grey	No	
070	0908_QC309_220524	HDPE (no PTFE)	20 mL	00350621037007	Grey	No	
070	0908_QC309_220524	HDPE (no PTFE)	20 mL	00350621036687	Grey	No	
070	0908_QC309_220524	HDPE (no PTFE)	20 mL	00350621036734	Grey	No	
071	0908_QC310_220525	HDPE (no PTFE)	20 mL	00350621057732	Grey	No	
071	0908_QC310_220525	HDPE (no PTFE)	20 mL	00350621057753	Grey	No	
071	0908_QC310_220525	HDPE (no PTFE)	20 mL	00350621057749	Grey	No	
072	0908_QC311_220526	HDPE (no PTFE)	20 mL	00352010028539	Grey	No	
072	0908_QC311_220526	HDPE (no PTFE)	20 mL	00352010028779	Grey	No	

**CHAIN OF CUSTODY**

COCH#: 37861 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_MW\_2

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

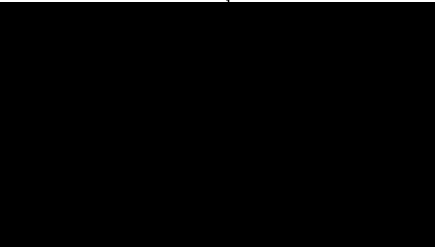
072	0908_QC311_220526	HDPE (no PTFE)	20 mL	00350621057779	Grey	No	
073	0908_QC312_220527	HDPE (no PTFE)	20 mL	00350621036739	Grey	No	
073	0908_QC312_220527	HDPE (no PTFE)	20 mL	00350621057818	Grey	No	
073	0908_QC312_220527	HDPE (no PTFE)	20 mL	00350621036969	Grey	No	
074	0908_QC313_220530	HDPE (no PTFE)	20 mL	00350621036817	Grey	No	
074	0908_QC313_220530	HDPE (no PTFE)	20 mL	00350621036792	Grey	No	
074	0908_QC313_220530	HDPE (no PTFE)	20 mL	00350621057825	Grey	No	
075	0908_QC314_220531	HDPE (no PTFE)	20 mL	00350621036677	Grey	No	
075	0908_QC314_220531	HDPE (no PTFE)	20 mL	00350621036548	Grey	No	
075	0908_QC314_220531	HDPE (no PTFE)	20 mL	00352010028693	Grey	No	
076	0908_QC315_220601	HDPE (no PTFE)	20 mL	00350621036985	Grey	No	
076	0908_QC315_220601	HDPE (no PTFE)	20 mL	00350621036914	Grey	No	
076	0908_QC315_220601	HDPE (no PTFE)	20 mL	00350621036701	Grey	No	
077	0908_QC316_220602	HDPE (no PTFE)	20 mL	00352010028636	Grey	No	
077	0908_QC316_220602	HDPE (no PTFE)	20 mL	00352010048017	Grey	No	
077	0908_QC316_220602	HDPE (no PTFE)	20 mL	00352010028649	Grey	No	

**Total Bottle Count: ALS: 231, Non ALS: 0**



ALS Use Only


## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: AECOM Project Manager: 

ALS Compass COC Reference: See instructions Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Phone: \_\_\_\_\_

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
ES2219407-37861 - <del>ES2219408</del> 38358 ES2219413 ES2219408 37864 - 38197 ES2219412 ES2219409 38180 - 38192 ES2219411	Custody seal intact? YES NO <u>N/A</u> Free ice / frozen ice bricks upon receipt? <u>YES</u> NO N/A Random sample temperature on receipt? 2-3 °C

Custody:			
Relinquished by: 	Received by: TO'B	Relinquished by: KS	Received by:
Date / Time: 2.6.22 4:42	Date / Time: 2/6/22 4:44 pm.	Date / Time: 2/6/22	Date / Time:

**MAILED**

LAB OF ORIGIN:  
NEWCASTLE

RP 2/6/22 2:40



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2219407  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 37861  
Site : WLM\_MW\_2  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 4  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 02-Jun-2022 16:44  
Client Requested Due Date : 09-Jun-2022  
Issue Date : 30-Jun-2022  
Scheduled Reporting Date : 09-Jun-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.3°C - Ice present  
No. of samples received / analysed : 78 / 78

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 08/06/2022: This is an updated SRN which indicates sample 0908\_MW280S\_220520 added to this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219407-001	24-May-2022 09:00	0908_MW106D_220524	✓
ES2219407-002	24-May-2022 09:06	0908_MW106S_220524	✓
ES2219407-003	31-May-2022 13:12	0908_MW126D_220531	✓
ES2219407-004	31-May-2022 13:19	0908_MW126S_220531	✓
ES2219407-005	01-Jun-2022 10:10	0908_MW130D_220601	✓
ES2219407-006	30-May-2022 14:00	0908_MW132D_220530	✓
ES2219407-007	30-May-2022 13:52	0908_MW132S_220530	✓
ES2219407-008	30-May-2022 11:49	0908_MW134D_220530	✓
ES2219407-009	30-May-2022 11:41	0908_MW134I_220530	✓
ES2219407-010	24-May-2022 15:37	0908_MW137_220524	✓
ES2219407-011	31-May-2022 12:32	0908_MW146AD_220531	✓
ES2219407-012	24-May-2022 10:50	0908_MW156D_220524	✓
ES2219407-013	01-Jun-2022 10:49	0908_MW158D_220601	✓
ES2219407-014	01-Jun-2022 10:56	0908_MW158S_220601	✓
ES2219407-015	01-Jun-2022 09:29	0908_MW159D_220601	✓
ES2219407-016	01-Jun-2022 09:23	0908_MW159S_220601	✓
ES2219407-017	31-May-2022 08:54	0908_MW160_220531	✓
ES2219407-018	01-Jun-2022 11:41	0908_MW161D_220601	✓
ES2219407-019	01-Jun-2022 11:39	0908_MW161S_220601	✓
ES2219407-020	25-May-2022 14:14	0908_MW166_220525	✓
ES2219407-021	25-May-2022 12:54	0908_MW167_220525	✓
ES2219407-022	26-May-2022 12:24	0908_MW168_220526	✓
ES2219407-023	01-Jun-2022 14:21	0908_MW178_220601	✓
ES2219407-024	31-May-2022 13:44	0908_MW188S_220531	✓
ES2219407-025	30-May-2022 09:26	0908_MW196_220530	✓
ES2219407-026	30-May-2022 08:56	0908_MW198_220530	✓
ES2219407-027	30-May-2022 09:12	0908_MW200_220530	✓
ES2219407-028	30-May-2022 08:40	0908_MW201D_220530	✓
ES2219407-029	30-May-2022 08:24	0908_MW201S_220530	✓
ES2219407-030	24-May-2022 13:33	0908_MW208_220524	✓
ES2219407-031	24-May-2022 11:20	0908_MW209D_220524	✓
ES2219407-032	24-May-2022 11:30	0908_MW209S_220524	✓
ES2219407-033	24-May-2022 12:35	0908_MW210D_220524	✓
ES2219407-034	24-May-2022 12:36	0908_MW210S_220524	✓
ES2219407-035	24-May-2022 11:59	0908_MW212_220524	✓





WATER - EP231X  
PFAS - Full Suite (28 analytes)

ES2219407-036	26-May-2022 10:25	0908_MW240D_220526	✓
ES2219407-037	24-May-2022 14:46	0908_MW241D_220524	✓
ES2219407-038	24-May-2022 14:42	0908_MW241S_220524	✓
ES2219407-039	30-May-2022 09:46	0908_MW244D_220530	✓
ES2219407-040	30-May-2022 09:57	0908_MW244S_220530	✓
ES2219407-041	30-May-2022 11:10	0908_MW245D_220530	✓
ES2219407-042	30-May-2022 11:16	0908_MW245S_220530	✓
ES2219407-043	02-Jun-2022 08:51	0908_MW264D_220602	✓
ES2219407-044	02-Jun-2022 08:57	0908_MW264S_220602	✓
ES2219407-045	26-May-2022 10:02	0908_MW281S_220526	✓
ES2219407-046	26-May-2022 10:13	0908_MW282S_220526	✓
ES2219407-047	26-May-2022 15:31	0908_MW315D_220526	✓
ES2219407-048	26-May-2022 15:36	0908_MW315S_220526	✓
ES2219407-049	20-May-2022 10:26	0908_MW316D_220520	✓
ES2219407-050	30-May-2022 12:10	0908_MW317D_220530	✓
ES2219407-051	30-May-2022 12:18	0908_MW317S_220530	✓
ES2219407-052	31-May-2022 09:48	0908_MW318D_220531	✓
ES2219407-053	31-May-2022 09:24	0908_MW318S_220531	✓
ES2219407-054	24-May-2022 09:40	0908_MW406_220524	✓
ES2219407-055	24-May-2022 10:52	0908_MW433_220524	✓
ES2219407-056	30-May-2022 14:22	0908_MW829_220530	✓
ES2219407-057	02-Jun-2022 09:39	0908_MW842_220602	✓
ES2219407-058	02-Jun-2022 09:51	0908_MW844_220602	✓
ES2219407-059	24-May-2022 09:40	0908_QC113_220524	✓
ES2219407-060	24-May-2022 12:35	0908_QC114_220524	✓
ES2219407-061	26-May-2022 10:13	0908_QC115_220526	✓
ES2219407-062	26-May-2022 15:31	0908_QC116_220526	✓
ES2219407-063	30-May-2022 08:56	0908_QC117_220530	✓
ES2219407-064	30-May-2022 13:52	0908_QC118_220530	✓
ES2219407-065	31-May-2022 08:54	0908_QC119_220531	✓
ES2219407-066	01-Jun-2022 10:49	0908_QC120_220601	✓
ES2219407-067	02-Jun-2022 08:57	0908_QC121_220602	✓
ES2219407-068	20-May-2022 16:18	0908_QC307_220520	✓
ES2219407-069	23-May-2022 16:20	0908_QC308_220523	✓
ES2219407-070	24-May-2022 16:21	0908_QC309_220524	✓
ES2219407-071	25-May-2022 16:22	0908_QC310_220525	✓
ES2219407-072	26-May-2022 16:23	0908_QC311_220526	✓
ES2219407-073	27-May-2022 16:25	0908_QC312_220527	✓
ES2219407-074	30-May-2022 16:26	0908_QC313_220530	✓
ES2219407-075	31-May-2022 16:27	0908_QC314_220531	✓
ES2219407-076	01-Jun-2022 16:24	0908_QC315_220601	✓



			WATER - EP231X PFAS - Full Suite (28 analytes)
ES2219407-077	02-Jun-2022 15:10	0908_QC316_220602	✓
ES2219407-078	20-May-2022 10:02	0908_MW280S_220520	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

#### ACCOUNTS PAYABLE

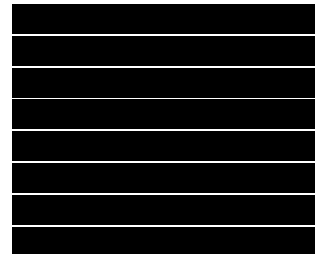
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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 Email



#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2219407</b> <b>Amendment</b> : <b>3</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37861 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_MW_2 <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 78 <b>No. of samples analysed</b> : 78	<b>Page</b> : 1 of 35  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 02-Jun-2022 16:44 <b>Date Analysis Commenced</b> : 06-Jun-2022 <b>Issue Date</b> : 04-Jul-2022 11:25
--	--



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	Organic Chemist	Sydney Organics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (04/07/2022): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X for sample 058.
- Amendment (30/06/2022): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 15/06/2022, for samples 6, & 50. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_22052	0908_MW106S_22052	0908_MW126D_22053	0908_MW126S_22053	0908_MW130D_22060
				4	4	1	1	1
				24-May-2022 09:00	24-May-2022 09:06	31-May-2022 13:12	31-May-2022 13:19	01-Jun-2022 10:10
Compound	CAS Number	LOR	Unit	ES2219407-001	ES2219407-002	ES2219407-003	ES2219407-004	ES2219407-005
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.23	<0.02	<0.02	0.37	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.24	<0.02	<0.02	0.47	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.57	0.17	<0.01	5.03	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.20	<0.02	<0.02	0.61	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.64	0.04	0.01	6.02	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.07	<0.02	<0.02	0.14	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.46	0.03	<0.02	1.25	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.07	<0.02	<0.02	0.17	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.14	<0.01	<0.01	0.28	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_22052	0908_MW106S_22052	0908_MW126D_22053	0908_MW126S_22053	0908_MW130D_22060
				4	4	1	1	1
				24-May-2022 09:00	24-May-2022 09:06	31-May-2022 13:12	31-May-2022 13:19	01-Jun-2022 10:10
Compound	CAS Number	LOR	Unit	ES2219407-001	ES2219407-002	ES2219407-003	ES2219407-004	ES2219407-005
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	5.62	0.24	0.01	14.4	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	4.21	0.21	0.01	11.0	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	5.18	0.24	0.01	13.4	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	115	111	116	108	118
13C8-PFOA	----	0.02	%	104	108	113	112	116



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_22053 0	0908_MW132S_22053 0	0908_MW134D_22053 0	0908_MW134I_22053 0	0908_MW137_220524
Sampling date / time				30-May-2022 14:00	30-May-2022 13:52	30-May-2022 11:49	30-May-2022 11:41	24-May-2022 15:37
Compound	CAS Number	LOR	Unit	ES2219407-006 Result	ES2219407-007 Result	ES2219407-008 Result	ES2219407-009 Result	ES2219407-010 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.70	0.14	0.03	0.03	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.41	0.34	0.02	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.08	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_22053 0	0908_MW132S_22053 0	0908_MW134D_22053 0	0908_MW134I_22053 0	0908_MW137_220524
Sampling date / time				30-May-2022 14:00	30-May-2022 13:52	30-May-2022 11:49	30-May-2022 11:41	24-May-2022 15:37
Compound	CAS Number	LOR	Unit	ES2219407-006 Result	ES2219407-007 Result	ES2219407-008 Result	ES2219407-009 Result	ES2219407-010 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.41	0.48	0.05	0.03	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.11	0.48	0.05	0.03	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.27	0.48	0.05	0.03	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	116	107	116	108	110
13C8-PFOA	----	0.02	%	107	99.9	111	107	110





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146AD_220 531	0908_MW156D_22052 4	0908_MW158D_22060 1	0908_MW158S_22060 1	0908_MW159D_22060 1
Sampling date / time				31-May-2022 12:32	24-May-2022 10:50	01-Jun-2022 10:49	01-Jun-2022 10:56	01-Jun-2022 09:29
Compound	CAS Number	LOR	Unit	ES2219407-011 Result	ES2219407-012 Result	ES2219407-013 Result	ES2219407-014 Result	ES2219407-015 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.27	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146AD_220 531	0908_MW156D_22052 4	0908_MW158D_22060 1	0908_MW158S_22060 1	0908_MW159D_22060 1
Sampling date / time				31-May-2022 12:32	24-May-2022 10:50	01-Jun-2022 10:49	01-Jun-2022 10:56	01-Jun-2022 09:29
Compound	CAS Number	LOR	Unit	ES2219407-011	ES2219407-012	ES2219407-013	ES2219407-014	ES2219407-015
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.28</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.28</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.28</b>	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>111</b>	<b>107</b>	<b>110</b>	<b>105</b>	<b>114</b>
13C8-PFOA	----	0.02	%	<b>104</b>	<b>111</b>	<b>108</b>	<b>106</b>	<b>111</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW159S_22060 1	0908_MW160_220531	0908_MW161D_22060 1	0908_MW161S_22060 1	0908_MW166_220525
Sampling date / time				01-Jun-2022 09:23	31-May-2022 08:54	01-Jun-2022 11:41	01-Jun-2022 11:39	25-May-2022 14:14
Compound	CAS Number	LOR	Unit	ES2219407-016 Result	ES2219407-017 Result	ES2219407-018 Result	ES2219407-019 Result	ES2219407-020 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.06	0.05	0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.09	0.07	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.02	0.85	0.84	1.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.08	0.09	0.07
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	1.94	2.39	12.6
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.04	0.04	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.15	0.14	0.16
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.03	0.03	0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.06	0.07	0.09
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW159S_22060 1	0908_MW160_220531	0908_MW161D_22060 1	0908_MW161S_22060 1	0908_MW166_220525
Sampling date / time				01-Jun-2022 09:23	31-May-2022 08:54	01-Jun-2022 11:41	01-Jun-2022 11:39	25-May-2022 14:14
Compound	CAS Number	LOR	Unit	ES2219407-016 Result	ES2219407-017 Result	ES2219407-018 Result	ES2219407-019 Result	ES2219407-020 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.02	3.30	3.74	14.0
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.02	2.79	3.23	13.6
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.02	3.13	3.56	13.9
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	108	116	109	104	110
13C8-PFOA	----	0.02	%	110	109	115	111	114



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW167_220525	0908_MW168_220526	0908_MW178_220601	0908_MW188S_22053 1	0908_MW196_220530
Sampling date / time				25-May-2022 12:54	26-May-2022 12:24	01-Jun-2022 14:21	31-May-2022 13:44	30-May-2022 09:26
Compound	CAS Number	LOR	Unit	ES2219407-021	ES2219407-022	ES2219407-023	ES2219407-024	ES2219407-025
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.06	0.03	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.15	0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.31	3.39	0.10	<0.01	0.40
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.13	<0.02	<0.02	0.06
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.44	7.87	0.04	0.02	7.36
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.04	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.04	<0.02	<0.02	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.40	0.04	<0.02	0.10
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.11	<0.02	<0.02	0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.24	<0.01	<0.01	0.06
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.04	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW167_220525	0908_MW168_220526	0908_MW178_220601	0908_MW188S_22053 1	0908_MW196_220530
Sampling date / time				25-May-2022 12:54	26-May-2022 12:24	01-Jun-2022 14:21	31-May-2022 13:44	30-May-2022 09:26
Compound	CAS Number	LOR	Unit	ES2219407-021	ES2219407-022	ES2219407-023	ES2219407-024	ES2219407-025
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	2.83	12.5	0.23	0.02	8.02
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.75	11.3	0.14	0.02	7.76
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.81	12.1	0.21	0.02	7.96
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	115	109	111	113	107
13C8-PFOA	----	0.02	%	107	112	109	101	106



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW198_220530	0908_MW200_220530	0908_MW201D_22053 0	0908_MW201S_22053 0	0908_MW208_220524
Sampling date / time				30-May-2022 08:56	30-May-2022 09:12	30-May-2022 08:40	30-May-2022 08:24	24-May-2022 13:33
Compound	CAS Number	LOR	Unit	ES2219407-026	ES2219407-027	ES2219407-028	ES2219407-029	ES2219407-030
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	<0.02	<0.02	<0.02	0.07
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.27	<0.02	<0.02	0.03	0.17
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	3.46	0.06	0.03	0.82	5.11
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.16	<0.02	<0.02	<0.02	0.53
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.42	0.40	<0.01	1.76	24.1
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	<0.02	<0.02	<0.02	0.09
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.30	0.02	<0.02	0.08	0.43
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	<0.02	<0.02	<0.02	0.14
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	<0.01	<0.01	0.02	0.36
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW198_220530	0908_MW200_220530	0908_MW201D_22053 0	0908_MW201S_22053 0	0908_MW208_220524
Sampling date / time				30-May-2022 08:56	30-May-2022 09:12	30-May-2022 08:40	30-May-2022 08:24	24-May-2022 13:33
Compound	CAS Number	LOR	Unit	ES2219407-026	ES2219407-027	ES2219407-028	ES2219407-029	ES2219407-030
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	7.88	0.48	0.03	2.71	31.1
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	6.88	0.46	0.03	2.58	29.2
Sum of PFAS (WA DER List)	----	0.01	µg/L	7.45	0.48	0.03	2.68	30.4
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	111	110	103	113	116
13C8-PFOA	----	0.02	%	110	108	113	104	106





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW209D_22052 4	0908_MW209S_22052 4	0908_MW210D_22052 4	0908_MW210S_22052 4	0908_MW212_220524
Sampling date / time				24-May-2022 11:20	24-May-2022 11:30	24-May-2022 12:35	24-May-2022 12:36	24-May-2022 11:59
Compound	CAS Number	LOR	Unit	ES2219407-031 Result	ES2219407-032 Result	ES2219407-033 Result	ES2219407-034 Result	ES2219407-035 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.02	<0.02	0.15	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.17	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.05	0.03	1.78	0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.07	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.58	<0.01	1.03	0.63
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.09	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.67	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.12	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.08	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW209D_22052	0908_MW209S_22052	0908_MW210D_22052	0908_MW210S_22052	0908_MW212_220524
				4	4	4	4	
Sampling date / time				24-May-2022 11:20	24-May-2022 11:30	24-May-2022 12:35	24-May-2022 12:36	24-May-2022 11:59
Compound	CAS Number	LOR	Unit	ES2219407-031	ES2219407-032	ES2219407-033	ES2219407-034	ES2219407-035
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.02	0.65	0.03	4.26	0.65
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	0.63	0.03	2.81	0.65
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	0.65	0.03	4.02	0.65
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	112	115	117	116	103
13C8-PFOA	----	0.02	%	103	110	112	111	111



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW240D_22052 6	0908_MW241D_22052 4	0908_MW241S_22052 4	0908_MW244D_22053 0	0908_MW244S_22053 0
Sampling date / time				26-May-2022 10:25	24-May-2022 14:46	24-May-2022 14:42	30-May-2022 09:46	30-May-2022 09:57
Compound	CAS Number	LOR	Unit	ES2219407-036 Result	ES2219407-037 Result	ES2219407-038 Result	ES2219407-039 Result	ES2219407-040 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.40	<0.01	<0.01	<0.01	0.04
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW240D_22052 6	0908_MW241D_22052 4	0908_MW241S_22052 4	0908_MW244D_22053 0	0908_MW244S_22053 0
Sampling date / time				26-May-2022 10:25	24-May-2022 14:46	24-May-2022 14:42	30-May-2022 09:46	30-May-2022 09:57
Compound	CAS Number	LOR	Unit	ES2219407-036 Result	ES2219407-037 Result	ES2219407-038 Result	ES2219407-039 Result	ES2219407-040 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.60</b>	<0.01	<0.01	<0.01	<b>0.04</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.44</b>	<0.01	<0.01	<0.01	<b>0.04</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.56</b>	<0.01	<0.01	<0.01	<b>0.04</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>112</b>	<b>112</b>	<b>114</b>	<b>106</b>	<b>100</b>
13C8-PFOA	----	0.02	%	<b>114</b>	<b>118</b>	<b>105</b>	<b>107</b>	<b>110</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW245D_22053 0	0908_MW245S_22053 0	0908_MW264D_22060 2	0908_MW264S_22060 2	0908_MW281S_22052 6
Sampling date / time				30-May-2022 11:10	30-May-2022 11:16	02-Jun-2022 08:51	02-Jun-2022 08:57	26-May-2022 10:02
Compound	CAS Number	LOR	Unit	ES2219407-041 Result	ES2219407-042 Result	ES2219407-043 Result	ES2219407-044 Result	ES2219407-045 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	1.87
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	2.32
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.03	<0.01	<0.01	19.4
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	3.12
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	68.6
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.4
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.67
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	4.06
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.61
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	2.16
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW245D_22053 0	0908_MW245S_22053 0	0908_MW264D_22060 2	0908_MW264S_22060 2	0908_MW281S_22052 6
Sampling date / time				30-May-2022 11:10	30-May-2022 11:16	02-Jun-2022 08:51	02-Jun-2022 08:57	26-May-2022 10:02
Compound	CAS Number	LOR	Unit	ES2219407-041 Result	ES2219407-042 Result	ES2219407-043 Result	ES2219407-044 Result	ES2219407-045 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.01	0.03	<0.01	0.02	103
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.03	<0.01	0.02	88.0
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	0.03	<0.01	0.02	97.8
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	113	112	111	106	113
13C8-PFOA	----	0.02	%	106	109	109	113	114



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW282S_22052	0908_MW315D_22052	0908_MW315S_22052	0908_MW316D_22052	0908_MW317D_22053
				6	6	6	0	0
Sampling date / time				26-May-2022 10:13	26-May-2022 15:31	26-May-2022 15:36	20-May-2022 10:26	30-May-2022 12:10
Compound	CAS Number	LOR	Unit	ES2219407-046	ES2219407-047	ES2219407-048	ES2219407-049	ES2219407-050
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.04	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.04	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.27	0.10	0.02	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.07	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW282S_22052 6	0908_MW315D_22052 6	0908_MW315S_22052 6	0908_MW316D_22052 0	0908_MW317D_22053 0
Sampling date / time				26-May-2022 10:13	26-May-2022 15:31	26-May-2022 15:36	20-May-2022 10:26	30-May-2022 12:10
Compound	CAS Number	LOR	Unit	ES2219407-046 Result	ES2219407-047 Result	ES2219407-048 Result	ES2219407-049 Result	ES2219407-050 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.41</b>	<b>0.25</b>	<b>0.02</b>	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.30</b>	<b>0.10</b>	<b>0.02</b>	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.38</b>	<b>0.21</b>	<b>0.02</b>	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>105</b>	<b>108</b>	<b>108</b>	<b>112</b>	<b>112</b>
13C8-PFOA	----	0.02	%	<b>110</b>	<b>102</b>	<b>108</b>	<b>110</b>	<b>104</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_22053 0	0908_MW318D_22053 1	0908_MW318S_22053 1	0908_MW406_220524	0908_MW433_220524
Sampling date / time				30-May-2022 12:18	31-May-2022 09:48	31-May-2022 09:24	24-May-2022 09:40	24-May-2022 10:52
Compound	CAS Number	LOR	Unit	ES2219407-051 Result	ES2219407-052 Result	ES2219407-053 Result	ES2219407-054 Result	ES2219407-055 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.19	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.20	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.60	<0.01	0.03	0.03
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.04	<0.01	<0.01	0.06
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.05	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.28	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.02	<0.01	<0.01	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_22053 0	0908_MW318D_22053 1	0908_MW318S_22053 1	0908_MW406_220524	0908_MW433_220524
Sampling date / time				30-May-2022 12:18	31-May-2022 09:48	31-May-2022 09:24	24-May-2022 09:40	24-May-2022 10:52
Compound	CAS Number	LOR	Unit	ES2219407-051 Result	ES2219407-052 Result	ES2219407-053 Result	ES2219407-054 Result	ES2219407-055 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.06	1.38	<0.01	0.03	0.11
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.06	0.64	<0.01	0.03	0.09
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.06	1.18	<0.01	0.03	0.11
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	110	113	105	106	118
13C8-PFOA	----	0.02	%	104	111	111	106	108



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0908_MW829_220530	0908_MW842_220602	0908_MW844_220602	0908_QC113_220524	0908_QC114_220524
			Sampling date / time	30-May-2022 14:22	02-Jun-2022 09:39	02-Jun-2022 09:51	24-May-2022 09:40	24-May-2022 12:35
Compound	CAS Number	LOR	Unit	ES2219407-056	ES2219407-057	ES2219407-058	ES2219407-059	ES2219407-060
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.18
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.20
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	<0.01	0.03	1.98
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.08
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.02	<0.01	<0.01	1.15
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.13
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.73
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.13
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.11
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW829_220530	0908_MW842_220602	0908_MW844_220602	0908_QC113_220524	0908_QC114_220524
Sampling date / time					30-May-2022 14:22	02-Jun-2022 09:39	02-Jun-2022 09:51	24-May-2022 09:40	24-May-2022 12:35
Compound	CAS Number	LOR	Unit	ES2219407-056	ES2219407-057	ES2219407-058	ES2219407-059	ES2219407-060	ES2219407-060
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	0.01	0.02	<0.01	0.03	4.79	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	0.02	<0.01	0.03	3.13	
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	0.02	<0.01	0.03	4.51	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	104	106	101	114	118	
13C8-PFOA	----	0.02	%	111	109	106	102	109	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC115_220526	0908_QC116_220526	0908_QC117_220530	0908_QC118_220530	0908_QC119_220531
Sampling date / time				26-May-2022 10:13	26-May-2022 15:31	30-May-2022 08:56	30-May-2022 13:52	31-May-2022 08:54	
Compound	CAS Number	LOR	Unit	ES2219407-061	ES2219407-062	ES2219407-063	ES2219407-064	ES2219407-065	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.06	0.10	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.06	0.36	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.37	0.16	4.60	0.20	0.04	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.21	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	<0.01	4.44	0.52	0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.07	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	0.11	0.42	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.06	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.14	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC115_220526	0908_QC116_220526	0908_QC117_220530	0908_QC118_220530	0908_QC119_220531
Sampling date / time					26-May-2022 10:13	26-May-2022 15:31	30-May-2022 08:56	30-May-2022 13:52	31-May-2022 08:54
Compound	CAS Number	LOR	Unit	ES2219407-061	ES2219407-062	ES2219407-063	ES2219407-064	ES2219407-065	ES2219407-065
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.56</b>	<b>0.39</b>	<b>10.4</b>	<b>0.72</b>	<b>0.05</b>	<b>0.05</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.41</b>	<b>0.16</b>	<b>9.04</b>	<b>0.72</b>	<b>0.05</b>	<b>0.05</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.52</b>	<b>0.33</b>	<b>9.83</b>	<b>0.72</b>	<b>0.05</b>	<b>0.05</b>
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>113</b>	<b>112</b>	<b>115</b>	<b>103</b>	<b>115</b>	<b>115</b>
13C8-PFOA	----	0.02	%	<b>110</b>	<b>114</b>	<b>110</b>	<b>106</b>	<b>110</b>	<b>110</b>



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC120_220601	0908_QC121_220602	0908_MW280S_22052 0	----	----
Sampling date / time				01-Jun-2022 10:49	02-Jun-2022 08:57	20-May-2022 10:02	----	----	
Compound	CAS Number	LOR	Unit	ES2219407-066	ES2219407-067	ES2219407-078	-----	-----	
				Result	Result	Result	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC120_220601	0908_QC121_220602	0908_MW280S_22052 0	----	----
Sampling date / time				01-Jun-2022 10:49	02-Jun-2022 08:57	20-May-2022 10:02	----	----	
Compound	CAS Number	LOR	Unit	ES2219407-066	ES2219407-067	ES2219407-078	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>112</b>	<b>114</b>	<b>94.6</b>	----	----	
13C8-PFOA	----	0.02	%	<b>113</b>	<b>106</b>	<b>85.2</b>	----	----	





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0908_QC307_220520	0908_QC308_220523	0908_QC309_220524	0908_QC310_220525	0908_QC311_220526
Sampling date / time			20-May-2022 16:18	23-May-2022 16:20	24-May-2022 16:21	25-May-2022 16:22	26-May-2022 16:23	
Compound	CAS Number	LOR	Unit	ES2219407-068	ES2219407-069	ES2219407-070	ES2219407-071	ES2219407-072
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC307_220520	0908_QC308_220523	0908_QC309_220524	0908_QC310_220525	0908_QC311_220526
Sampling date / time				20-May-2022 16:18	23-May-2022 16:20	24-May-2022 16:21	25-May-2022 16:22	26-May-2022 16:23	
Compound	CAS Number	LOR	Unit	ES2219407-068	ES2219407-069	ES2219407-070	ES2219407-071	ES2219407-072	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	108	105	108	112	118	
13C8-PFOA	----	0.02	%	112	109	114	113	110	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID		0908_QC312_220527	0908_QC313_220530	0908_QC314_220531	0908_QC315_220601	0908_QC316_220602
		Sampling date / time		27-May-2022 16:25	30-May-2022 16:26	31-May-2022 16:27	01-Jun-2022 16:24	02-Jun-2022 15:10
Compound	CAS Number	LOR	Unit	ES2219407-073	ES2219407-074	ES2219407-075	ES2219407-076	ES2219407-077
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC312_220527	0908_QC313_220530	0908_QC314_220531	0908_QC315_220601	0908_QC316_220602
Sampling date / time					27-May-2022 16:25	30-May-2022 16:26	31-May-2022 16:27	01-Jun-2022 16:24	02-Jun-2022 15:10
Compound	CAS Number	LOR	Unit	ES2219407-073	ES2219407-074	ES2219407-075	ES2219407-076	ES2219407-077	ES2219407-077
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	116	118	109	106	114	114
13C8-PFOA	----	0.02	%	112	113	111	113	110	110



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2219407	Page	: 1 of 13
Amendment	: 3		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 02-Jun-2022
Site	: WLM_MW_2	Issue Date	: 04-Jul-2022
Sampler	: [REDACTED]	No. of samples received	: 78
Order number	: 60612562_2.1	No. of samples analysed	: 78

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>									
0908_MW106D_220524, 0908_MW137_220524, 0908_MW208_220524, 0908_MW209S_220524, 0908_MW210S_220524, 0908_MW241D_220524, 0908_MW406_220524, 0908_QC113_220524, 0908_QC309_220524	0908_MW106S_220524, 0908_MW156D_220524, 0908_MW209D_220524, 0908_MW210D_220524, 0908_MW212_220524, 0908_MW241S_220524, 0908_MW433_220524, 0908_QC114_220524	24-May-2022	08-Jun-2022	20-Nov-2022	✓	08-Jun-2022	20-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW166_220525, 0908_QC310_220525	0908_MW167_220525,	25-May-2022	08-Jun-2022	21-Nov-2022	✓	08-Jun-2022	21-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW168_220526, 0908_MW281S_220526, 0908_MW315D_220526, 0908_QC115_220526, 0908_QC311_220526	0908_MW240D_220526, 0908_MW282S_220526, 0908_MW315S_220526, 0908_QC116_220526,	26-May-2022	08-Jun-2022	22-Nov-2022	✓	08-Jun-2022	22-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC312_220527		27-May-2022	08-Jun-2022	23-Nov-2022	✓	08-Jun-2022	23-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW132D_220530, 0908_MW134D_220530, 0908_MW196_220530, 0908_MW200_220530, 0908_MW201S_220530, 0908_MW244S_220530, 0908_MW245S_220530, 0908_MW317S_220530, 0908_QC117_220530, 0908_QC313_220530	0908_MW132S_220530, 0908_MW134I_220530, 0908_MW198_220530, 0908_MW201D_220530, 0908_MW244D_220530, 0908_MW245D_220530, 0908_MW317D_220530, 0908_MW829_220530, 0908_QC118_220530,	30-May-2022	08-Jun-2022	26-Nov-2022	✓	08-Jun-2022	26-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW126D_220531, 0908_MW146AD_220531, 0908_MW188S_220531, 0908_MW318S_220531, 0908_QC314_220531	0908_MW126S_220531, 0908_MW160_220531, 0908_MW318D_220531, 0908_QC119_220531,	31-May-2022	08-Jun-2022	27-Nov-2022	✓	08-Jun-2022	27-Nov-2022	✓	







Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids - Continued</b>								
0908_MW132D_220530, 0908_MW134D_220530, 0908_MW196_220530, 0908_MW200_220530, 0908_MW201S_220530, 0908_MW244S_220530, 0908_MW245S_220530, 0908_MW317S_220530, 0908_QC117_220530, 0908_QC313_220530	0908_MW132S_220530, 0908_MW134I_220530, 0908_MW198_220530, 0908_MW201D_220530, 0908_MW244D_220530, 0908_MW245D_220530, 0908_MW317D_220530, 0908_MW829_220530, 0908_QC118_220530	30-May-2022	08-Jun-2022	26-Nov-2022	✓	08-Jun-2022	26-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b>								
0908_MW126D_220531, 0908_MW146AD_220531, 0908_MW188S_220531, 0908_MW318S_220531, 0908_QC314_220531	0908_MW126S_220531, 0908_MW160_220531, 0908_MW318D_220531, 0908_QC119_220531	31-May-2022	08-Jun-2022	27-Nov-2022	✓	08-Jun-2022	27-Nov-2022	✓





Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
0908_MW132D_220530, 0908_MW134D_220530, 0908_MW196_220530, 0908_MW200_220530, 0908_MW201S_220530, 0908_MW244S_220530, 0908_MW245S_220530, 0908_MW317S_220530, 0908_QC117_220530, 0908_QC313_220530	0908_MW132S_220530, 0908_MW134I_220530, 0908_MW198_220530, 0908_MW201D_220530, 0908_MW244D_220530, 0908_MW245D_220530, 0908_MW317D_220530, 0908_MW829_220530, 0908_QC118_220530,	30-May-2022	08-Jun-2022	26-Nov-2022	✓	08-Jun-2022	26-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b>									
0908_MW126D_220531, 0908_MW146AD_220531, 0908_MW188S_220531, 0908_MW318S_220531, 0908_QC314_220531	0908_MW126S_220531, 0908_MW160_220531, 0908_MW318D_220531, 0908_QC119_220531,	31-May-2022	08-Jun-2022	27-Nov-2022	✓	08-Jun-2022	27-Nov-2022	✓	





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued</b>								
0908_MW132D_220530, 0908_MW134D_220530, 0908_MW196_220530, 0908_MW200_220530, 0908_MW201S_220530, 0908_MW244S_220530, 0908_MW245S_220530, 0908_MW317S_220530, 0908_QC117_220530, 0908_QC313_220530	0908_MW132S_220530, 0908_MW134I_220530, 0908_MW198_220530, 0908_MW201D_220530, 0908_MW244D_220530, 0908_MW245D_220530, 0908_MW317D_220530, 0908_MW829_220530, 0908_QC118_220530,	30-May-2022	08-Jun-2022	26-Nov-2022	✓	08-Jun-2022	26-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b>								
0908_MW126D_220531, 0908_MW146AD_220531, 0908_MW188S_220531, 0908_MW318S_220531, 0908_QC314_220531	0908_MW126S_220531, 0908_MW160_220531, 0908_MW318D_220531, 0908_QC119_220531,	31-May-2022	08-Jun-2022	27-Nov-2022	✓	08-Jun-2022	27-Nov-2022	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231P: PFAS Sums - Continued</b>									
0908_MW132D_220530, 0908_MW134D_220530, 0908_MW196_220530, 0908_MW200_220530, 0908_MW201S_220530, 0908_MW244S_220530, 0908_MW245S_220530, 0908_MW317S_220530, 0908_QC117_220530, 0908_QC313_220530	0908_MW132S_220530, 0908_MW134I_220530, 0908_MW198_220530, 0908_MW201D_220530, 0908_MW244D_220530, 0908_MW245D_220530, 0908_MW317D_220530, 0908_MW829_220530, 0908_QC118_220530,	30-May-2022	08-Jun-2022	26-Nov-2022	✓	08-Jun-2022	26-Nov-2022	✓	
<b>HDPE (no PTFE) (EP231X)</b>									
0908_MW126D_220531, 0908_MW146AD_220531, 0908_MW188S_220531, 0908_MW318S_220531, 0908_QC314_220531	0908_MW126S_220531, 0908_MW160_220531, 0908_MW318D_220531, 0908_QC119_220531,	31-May-2022	08-Jun-2022	27-Nov-2022	✓	08-Jun-2022	27-Nov-2022	✓	





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	88	1.14	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	88	5.68	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	88	5.68	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	88	1.14	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2219407</b>	Page	: 1 of 9
<b>Amendment</b>	: <b>3</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 02-Jun-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 06-Jun-2022
<b>C-O-C number</b>	: 37861	<b>Issue Date</b>	: 04-Jul-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_MW_2		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 78		
<b>No. of samples analysed</b>	: 78		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	Organic Chemist	Sydney Organics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4385301)</b>									
ES2219318-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4385301)</b>									
ES2219318-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4385301)</b>							
ES2219318-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4385301) - continued</b>									
ES2219318-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4385301)</b>									
ES2219318-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4385301)</b>									
ES2219318-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4384508)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	115	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	105	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	117	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	112	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	118	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4384510)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	121	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	118	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	114	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	116	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385153)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	115	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	112	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	113	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	113	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	119	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385301)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	119	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	125	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4387569)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	109	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	106	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	109	53.0	142	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4384508)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	99.7	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.6	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	78.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	120	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4384510)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	102	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385153)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	101	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	117	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	122	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	113	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	92.9	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385301)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	118	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	124	72.0	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385301) - continued</b>									
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	127	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	126	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	120	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	126	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	125	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4387569)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.4	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	107	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	107	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4384508)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	122	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4384510)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	112	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	121	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	101	66.0	145	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4384510) - continued</b>									
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.6	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385153)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	103	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	125	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.6	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	121	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385301)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	121	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	124	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	120	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	119	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	128	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	113	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4387569)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	124	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	112	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	105	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.1	57.6	145	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Acceptable Limits (%)	
					Concentration	LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4387569) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	124	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	120	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4384508)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	110	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	84.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	108	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4384510)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	114	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	115	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	116	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385153)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	120	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	98.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	118	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385301)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	110	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	119	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	115	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4387569)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	102	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	120	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	112	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Acceptable Limits (%)
				Concentration	MS	Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385301)</b>						



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4385301) - continued</b>							
ES2219318-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	102	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	107	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	125	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	126	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4385301)</b>							
ES2219318-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	117	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	125	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	128	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	120	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	120	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	125	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	110	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	123	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4385301)</b>							
ES2219318-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	123	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	123	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	120	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	119	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	123	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	114	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	122	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4385301)</b>							
ES2219318-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	123	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	118	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	126	71.4	144

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tran*  
 DATE TIME: *20/5/22 19:30*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_QC3  
 ORDER NO: 60612562\_2.1

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

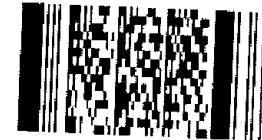
LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

PROJECT MANAGER: [Redacted]  
 PRIMARY SAMPLER: [Redacted]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_QC302_220517		17/05/2022 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
002	0908_QC301_220516		16/05/2022 04:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
003	0908_QC300_220516		16/05/2022 05:04 PM	Water	ALS: 3 Non ALS: 0	No	X		
004	0908_QC303_220517	<i>Not received</i>	17/05/2022 04:45 PM	Water	ALS: 3 Non ALS: 0	No	X		
005	0908_QC304_220518	<i>Not received</i>	18/05/2022 05:10 PM	Water	ALS: 3 Non ALS: 0	No	X		
006	0908_QC305_220518		18/05/2022 05:00 PM	Water	ALS: 3 Non ALS: 0	No	X		
007	0908_QC306_220519		19/05/2022 06:00 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217548**



Telephone : + 61-2-6784 8555



RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tan*  
 DATE TIME: 20/5/22 19:30

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_QC3  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_QC302_220517		17/05/2022 04:32 PM	Water	ALS: 2 Non ALS: 0	No	X		
002	0908_QC301_220516		16/05/2022 04:04 PM	Water	ALS: 2 Non ALS: 0	No	X		
003	0908_QC300_220516		16/05/2022 05:04 PM	Water	ALS: 3 Non ALS: 0	No	X		
004	0908_QC303_220517		17/05/2022 04:45 PM	Water	ALS: 3 Non ALS: 0	No	X		
005	0908_QC304_220518		18/05/2022 05:10 PM	Water	ALS: 3 Non ALS: 0	No	X		
006	0908_QC305_220518		18/05/2022 05:00 PM	Water	ALS: 3 Non ALS: 0	No	X		
007	0908_QC306_220519		19/05/2022 06:00 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217548**



Telephone + 61-2-8784 8555

RELINQUISHED BY:  
 DATE TIME:

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RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_QC3  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_QC302_220517	HDPE (no PTFE)	20 mL	00350621021862	Grey	No	
001	0908_QC302_220517	HDPE (no PTFE)	20 mL	00350621021752	Grey	No	
002	0908_QC301_220516	HDPE (no PTFE)	20 mL	00350621021967	Grey	No	
002	0908_QC301_220516	HDPE (no PTFE)	20 mL	00350621021790	Grey	No	
003	0908_QC300_220516	HDPE (no PTFE)	20 mL	00352010021750	Grey	No	
003	0908_QC300_220516	HDPE (no PTFE)	20 mL	00350621057599	Grey	No	
003	0908_QC300_220516	HDPE (no PTFE)	20 mL	00352010021786	Grey	No	
004	0908_QC303_220517	HDPE (no PTFE)	20 mL	00350621057736	Grey	No	
004	0908_QC303_220517	HDPE (no PTFE)	20 mL	00350621034220	Grey	No	
004	0908_QC303_220517	HDPE (no PTFE)	20 mL	00350621057886	Grey	No	
005	0908_QC304_220518	HDPE (no PTFE)	20 mL	00350621036794	Grey	No	
005	0908_QC304_220518	HDPE (no PTFE)	20 mL	00350621036606	Grey	No	
005	0908_QC304_220518	HDPE (no PTFE)	20 mL	00350621036650	Grey	No	
006	0908_QC305_220518	HDPE (no PTFE)	20 mL	00350621036331	Grey	No	
006	0908_QC305_220518	HDPE (no PTFE)	20 mL	00350621034210	Grey	No	
006	0908_QC305_220518	HDPE (no PTFE)	20 mL	00350621022260	Grey	No	
007	0908_QC306_220519	HDPE (no PTFE)	20 mL	00352010028622	Grey	No	
007	0908_QC306_220519	HDPE (no PTFE)	20 mL	00352010028484	Grey	No	
007	0908_QC306_220519	HDPE (no PTFE)	20 mL	00350621022104	Grey	No	

**Total Bottle Count: ALS: 19, Non ALS: 0**



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217548

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37867  
Site : WLM\_QC3  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 25-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 7 / 7

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **25/05/2022: ES2217533-051 incorrectly labelled sample with bottles scanned twice, allocated to correct sample code ES2217548-005**
- **Please note - Sample 005 was re-added as sample 008**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217548-001	17-May-2022 16:32	0908_QC302_220517	✓
ES2217548-002	16-May-2022 16:04	0908_QC301_220516	✓
ES2217548-003	16-May-2022 17:04	0908_QC300_220516	✓
ES2217548-004	17-May-2022 16:45	0908_QC303_220517	✓
ES2217548-006	18-May-2022 17:00	0908_QC305_220518	✓
ES2217548-007	19-May-2022 18:00	0908_QC306_220519	✓
ES2217548-008	18-May-2022 17:10	0908_QC304_220518	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
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- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217548**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37867  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM\_QC3  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 7  
**No. of samples analysed** : 7

**Page** : 1 of 7  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:29



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID		0908_QC302_220517	0908_QC301_220516	0908_QC300_220516	0908_QC303_220517	0908_QC305_220518
		Sampling date / time		17-May-2022 16:32	16-May-2022 16:04	16-May-2022 17:04	17-May-2022 16:45	18-May-2022 17:00
Compound	CAS Number	LOR	Unit	ES2217548-001	ES2217548-002	ES2217548-003	ES2217548-004	ES2217548-006
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC302_220517	0908_QC301_220516	0908_QC300_220516	0908_QC303_220517	0908_QC305_220518
Sampling date / time					17-May-2022 16:32	16-May-2022 16:04	16-May-2022 17:04	17-May-2022 16:45	18-May-2022 17:00
Compound	CAS Number	LOR	Unit	ES2217548-001	ES2217548-002	ES2217548-003	ES2217548-004	ES2217548-006	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	116	109	110	104	109	
13C8-PFOA	----	0.02	%	73.4	71.2	70.4	69.3	68.3	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID		0908_QC306_220519	0908_QC304_220518	----	----	----
			Sampling date / time		19-May-2022 18:00	18-May-2022 17:10	----	----	----
Compound	CAS Number	LOR	Unit	ES2217548-007	ES2217548-008	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID		0908_QC306_220519	0908_QC304_220518	----	----	----
		Sampling date / time		19-May-2022 18:00	18-May-2022 17:10	----	----	----
Compound	CAS Number	LOR	Unit	ES2217548-007	ES2217548-008	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	103	105	----	----	----
13C8-PFOA	----	0.02	%	66.9	72.6	----	----	----





### Surrogate Control Limits

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217548	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM_QC3	Issue Date	: 27-May-2022
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 7
Order number	: 60612562_2.1	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC301_220516, 0908_QC300_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	12-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC302_220517, 0908_QC303_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	13-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC305_220518, 0908_QC304_220518	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	14-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC306_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	15-Nov-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC301_220516, 0908_QC300_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	12-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC302_220517, 0908_QC303_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	13-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC305_220518, 0908_QC304_220518	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	14-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC306_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	15-Nov-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_QC301_220516, 0908_QC300_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	12-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC302_220517, 0908_QC303_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	13-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC305_220518, 0908_QC304_220518	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	14-Nov-2022	✓
HDPE (no PTFE) (EP231X) 0908_QC306_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	15-Nov-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC301_220516,	0908_QC300_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC302_220517,	0908_QC303_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_220518,	0908_QC304_220518	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_220519		19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	15-Nov-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC301_220516,	0908_QC300_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC302_220517,	0908_QC303_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC305_220518,	0908_QC304_220518	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC306_220519		19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	15-Nov-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217548</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37867 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_QC3 <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 7 <b>No. of samples analysed</b> : 7	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4360180)</b>									
ES2217578-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.79	1.76	1.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.14	0.16	10.8	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.07	17.5	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.14	0.13	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2217473-004	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360180)</b>									
ES2217578-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.26	0.30	16.4	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.92	0.91	1.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.85	0.84	0.0	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	1.14	1.20	5.1	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.3	0.3	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360180) - continued</b>									
ES2217473-004	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4360180)</b>									
ES2217578-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2217473-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4360180)</b>									
ES2217578-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4360180) - continued</b>									
ES2217578-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2217473-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4360180)</b>									
ES2217578-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	5.62	5.70	1.4	0% - 20%
ES2217473-004	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.03	40.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360180)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	112	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	113	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	115	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	114	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360180)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	124	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	114	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	78.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	118	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	115	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360180)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	101	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.6	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	124	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360180)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	112	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	123	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	125	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360180) - continued</b>							
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	129	71.4 144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360180)</b>							
ES2217578-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	105	72.0 130	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	126	71.0 127	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	119	68.0 131	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	120	69.0 134	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	129	65.0 140	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	115	53.0 142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360180)</b>							
ES2217578-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0 129	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	93.8	72.0 129	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	114	72.0 129	
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	115	72.0 130	
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	112	71.0 133	
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	108	69.0 130	
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	124	71.0 129	
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	111	69.0 133	
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	81.0	72.0 134	
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	124	65.0 144	
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	120	71.0 132	
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360180)</b>					
ES2217578-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	104	67.0 137	
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0 141	
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	92.3	62.6 147	
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	102	66.0 145	
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	73.4	57.6 145	
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	106	65.0 136	



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360180) - continued</b>							
ES2217578-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	115	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360180)</b>							
ES2217578-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	113	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	116	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	119	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	116	71.4	144

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tan*  
 DATE TIME: 20/5/22 19:00

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

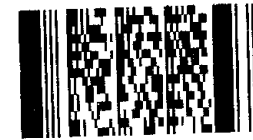
TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT236_220518		18/05/2022 02:56 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217547**



Telephone : + 61-2-8784 8555

**CHAIN OF CUSTODY**

COC#: 37789

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT236_220518	HDPE (no PTFE)	20 mL	00350621034060	Grey	No	
001	0908_POT236_220518	HDPE (no PTFE)	20 mL	00352010026094	Grey	No	
001	0908_POT236_220518	HDPE (no PTFE)	20 mL	00352010026232	Grey	No	

**Total Bottle Count: ALS: 3, Non ALS: 0**



SY091

PP

20/5



**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence Project Manager:   
 Phone:   
 ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188      - 37693      - 37748      - 37615      - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES      NO      N/A
- 37190      - 37789      - 37662      - 37602      - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES      NO      N/A
- 37694      - 37788      - 37628      - 37585      - 37209	Random sample temperature on receipt?      2.5 °C

Custody:			
Relinquished by: <u>AM</u>	Received by: <u>JN</u>	Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>	Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**  
 LAB OF ORIGIN:  
 NEWCASTLE

PP 20/5/22 7240





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217547

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
  
E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----  
  
Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1  
  
C-O-C number : 37789  
Site : WLM-R  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164  
  
E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500  
  
Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217547-001	18-May-2022 14:56	0908_POT236_220518	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

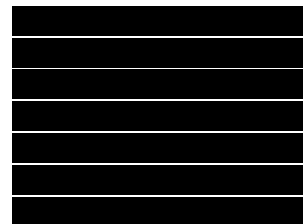
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217547**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37789  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:24



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT236\_22051  
8

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Sampling date / time

18-May-2022 14:56

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Compound	CAS Number	LOR	Unit
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ES2217547-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.04	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT236\_22051  
8

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Sampling date / time

18-May-2022 14:56

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Compound

CAS Number

LOR

Unit

ES2217547-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.08	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.08	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.08	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	110	----	----	----	----
13C8-PFOA	----	0.02	%	74.4	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217547	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217547</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37789 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



**CHAIN OF CUSTODY**  
**ALS** COC#: 37788 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *P. Tan*  
20/5/22 19:30

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT257_220518		18/05/2022 03:12 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217546**



Telephone : + 61-2-8784 8556

**CHAIN OF CUSTODY**  
 ALS COC#: 37788 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT257_220518	HDPE (no PTFE)	20 mL	00350621036607	Grey	No	
001	0908_POT257_220518	HDPE (no PTFE)	20 mL	00350621036762	Grey	No	
001	0908_POT257_220518	HDPE (no PTFE)	20 mL	00350621036991	Grey	No	

**Total Bottle Count: ALS: 3, Non ALS: 0**

521051 - AP 20/5

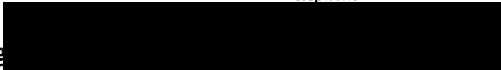
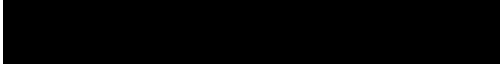
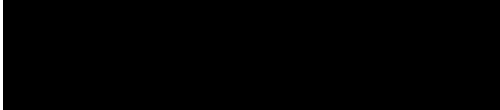


Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217546**



Telephone : + 61-2-8784 8555

**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence Project Manager:   
 Phone:   
 ALS Compass COC Reference: 17x COCs below # Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone:   
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A
- 37190    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A
- 37694    - 37788    - 37645    - 37585    - 37209	Random sample temperature on receipt?    2.5 °C

Custody:			
Relinquished by: <u>CM</u>	Received by: <u>JN</u>	Relinquished by: <u>YJB</u>	Received by:
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>	Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7240



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217546

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
  
E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----  
  
Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1  
  
C-O-C number : 37788  
Site : WLM-R  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164  
  
E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500  
  
Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217546-001	18-May-2022 15:12	0908_POT257_220518	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

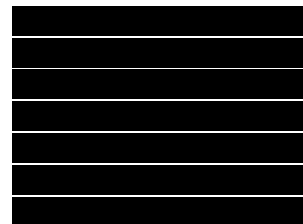
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



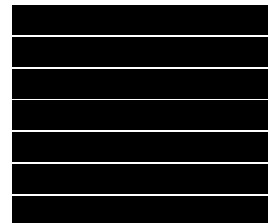
- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217546**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37788  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:24



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT257\_22051  
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Sampling date / time

18-May-2022 15:12

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Compound	CAS Number	LOR	Unit
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ES2217546-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT257\_22051  
8

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Sampling date / time

18-May-2022 15:12

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Compound

CAS Number

LOR

Unit

ES2217546-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.02	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	106	----	----	----	----
13C8-PFOA	----	0.02	%	75.1	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217546	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_220518	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217546</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37788 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
---	---



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37748 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P Tan*  
 DATE TIME: 20/5/22 19:30

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW231D_0950		18/05/2022 09:50 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW231S_0940		18/05/2022 09:40 AM	Water	ALS: 3 Non ALS: 0	No	X		
003	0908_POT382_220518		18/05/2022 10:10 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217545**



Telephone : +61-2-8784 8555

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

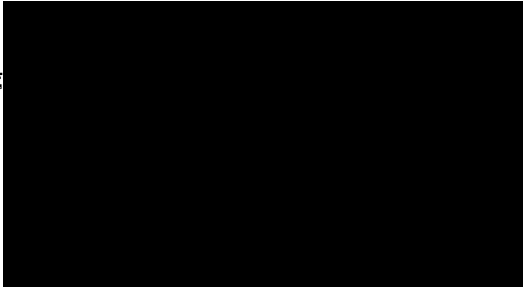
SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW231D_0950	HDPE (no PTFE)	20 mL	00350621036816	Grey	No	
001	0908_MW231D_0950	HDPE (no PTFE)	20 mL	00350621036570	Grey	No	
001	0908_MW231D_0950	HDPE (no PTFE)	20 mL	00350621036724	Grey	No	
002	0908_MW231S_0940	HDPE (no PTFE)	20 mL	00350621036685	Grey	No	
002	0908_MW231S_0940	HDPE (no PTFE)	20 mL	00350621036661	Grey	No	
002	0908_MW231S_0940	HDPE (no PTFE)	20 mL	00350621036573	Grey	No	
003	0908_POT382_220518	HDPE (no PTFE)	20 mL	00350621036784	Grey	No	
003	0908_POT382_220518	HDPE (no PTFE)	20 mL	00350621036453	Grey	No	
003	0908_POT382_220518	HDPE (no PTFE)	20 mL	00350621036864	Grey	No	

**Total Bottle Count: ALS: 9, Non ALS: 0**

SY051 - PP dols



## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager: 

ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
Phone: \_\_\_\_\_

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188      - 37693      - 37748      - 37615      - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES NO N/A
- 37190      - 37789      - 37662      - 37602      - 37867	Free ice / frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES NO N/A
- 37694      - 37788      - 37628      - 37585      - 37209	Random sample temperature on receipt? <u>2.5</u> °C

**Custody:**

Relinquished by: <u>AM</u>	Received by: <u>JN</u>	Relinquished by: <u>JPB</u>	Received by:
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>	Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

RP 20/5/22 7140



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217545  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 37748  
Site : WLM-R  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due : 27-May-2022  
Date

Issue Date : 30-Jun-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217545-001	18-May-2022 09:37	0908_MW231D_220518	✓
ES2217545-002	18-May-2022 09:40	0908_MW231S_220518	✓
ES2217545-003	18-May-2022 10:10	0908_POT382_220518	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

Email

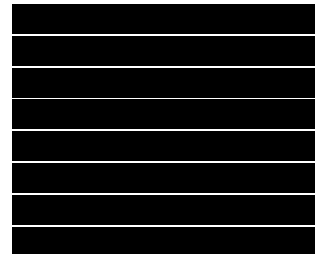
Email

Email

Email

Email

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2217545</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37748 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 3 <b>No. of samples analysed</b> : 3	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 14:30 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 30-Jun-2022 14:14
--	---



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/06/2022): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 15/06/2022, for sample 1. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_22051 8	0908_MW231S_22051 8	----	----	----
		Sampling date / time		18-May-2022 09:37	18-May-2022 09:40	----	----	----
Compound	CAS Number	LOR	Unit	ES2217545-001 Result	ES2217545-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_22051 8	0908_MW231S_22051 8	----	----	----
				18-May-2022 09:37	18-May-2022 09:40	----	----	----
Compound	CAS Number	LOR	Unit	ES2217545-001	ES2217545-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.02	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.02	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.02	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	107	----	----	----
13C8-PFOA	----	0.02	%	73.4	76.6	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT382\_22051  
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Sampling date / time

18-May-2022 10:10

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Compound	CAS Number	LOR	Unit
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ES2217545-003

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT382\_22051  
8

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Sampling date / time

18-May-2022 10:10

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Compound

CAS Number

LOR

Unit

ES2217545-003

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	110	----	----	----	----
13C8-PFOA	----	0.02	%	74.2	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217545	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 30-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 3
Order number	: 60612562_2.1	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_220518, 0908_POT382_220518	0908_MW231S_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_220518, 0908_POT382_220518	0908_MW231S_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_220518, 0908_POT382_220518	0908_MW231S_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_220518, 0908_POT382_220518	0908_MW231S_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW231D_220518, 0908_POT382_220518	0908_MW231S_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	14-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2217545</b>	<b>Page</b>	: 1 of 4
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 20-May-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 23-May-2022
<b>C-O-C number</b>	: 37748	<b>Issue Date</b>	: 30-Jun-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM-R		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 3		
<b>No. of samples analysed</b>	: 3		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**





# CHAIN OF CUSTODY

COC#: 37694

CLIENT: ALS / ES Sydney

PROJECT: AECOMAU - AECOM / AECOM Pty Ltd

SITE: NSW\_0908\_PFA / WLM-R

ORDER NO: 600

PROJECT MA / PRIMARY SAM

EMAIL REPORT

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME: P. Tran 20/5/22 19:30

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
SAMPLER MOBILE: 4

### LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

### SAMPLE DETAILS

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		
							PEAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW270S_220517		17/05/2022 01:46 PM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW270D_220517		17/05/2022 01:55 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
Sydney

Work Order Reference  
**ES2217544**



Telephone : + 61-2-8784 8555

**CHAIN OF CUSTODY**  
 ALS COC#: 37694 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW270S_220517	HDPE (no PTFE)	20 mL	00350821049808	Grey	No	
001	0908_MW270S_220517	HDPE (no PTFE)	20 mL	00350821049969	Grey	No	
001	0908_MW270S_220517	HDPE (no PTFE)	20 mL	00350821049957	Grey	No	
002	0908_MW270D_220517	HDPE (no PTFE)	20 mL	00350821049703	Grey	No	
002	0908_MW270D_220517	HDPE (no PTFE)	20 mL	00350821049899	Grey	No	
002	0908_MW270D_220517	HDPE (no PTFE)	20 mL	00350821049851	Grey	No	

**Total Bottle Count: ALS: 6, Non ALS: 0**

SY/51 - PP 2015





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217544

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37694  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217544-001	17-May-2022 13:46	0908_MW270S_220517	✓
ES2217544-002	17-May-2022 13:55	0908_MW270D_220517	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

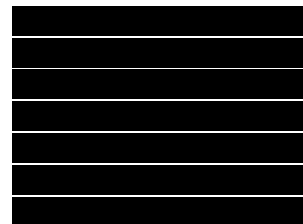
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



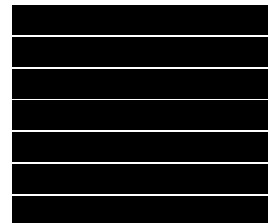
- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217544**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37694  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:28



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_22051 7	0908_MW270D_22051 7	----	----	----
Sampling date / time				17-May-2022 13:46	17-May-2022 13:55	----	----	----
Compound	CAS Number	LOR	Unit	ES2217544-001 Result	ES2217544-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.02</b>	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.01</b>	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<b>0.08</b>	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.10</b>	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<b>0.04</b>	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_22051 7	0908_MW270D_22051 7	----	----	----
Sampling date / time				17-May-2022 13:46	17-May-2022 13:55	----	----	----
Compound	CAS Number	LOR	Unit	ES2217544-001 Result	ES2217544-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.25</b>	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.03</b>	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.25</b>	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>109</b>	<b>108</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>74.5</b>	<b>76.0</b>	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217544	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_220517,	0908_MW270D_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_220517,	0908_MW270D_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_220517,	0908_MW270D_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_220517,	0908_MW270D_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_220517,	0908_MW270D_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217544</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37694 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



**CHAIN OF CUSTODY**  
 (ALS) COC#: 37693 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW147D_220517	HDPE (no PTFE)	20 mL	00352010028653	Grey	No	
001	0908_MW147D_220517	HDPE (no PTFE)	20 mL	00352010050462	Grey	No	
001	0908_MW147D_220517	HDPE (no PTFE)	20 mL	00350621036304	Grey	No	
002	0908_MW147S_220517	HDPE (no PTFE)	20 mL	00352010028623	Grey	No	
002	0908_MW147S_220517	HDPE (no PTFE)	20 mL	00350621034146	Grey	No	
002	0908_MW147S_220517	HDPE (no PTFE)	20 mL	00350621034116	Grey	No	

**Total Bottle Count: ALS: 6, Non ALS: 0**

SY051 - RP 20/5





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217543

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
  
E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----  
  
Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1  
  
C-O-C number : 37693  
Site : WLM-R  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164  
  
E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500  
  
Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217543-001	17-May-2022 13:30	0908_MW147D_220517	✓
ES2217543-002	17-May-2022 13:15	0908_MW147S_220517	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

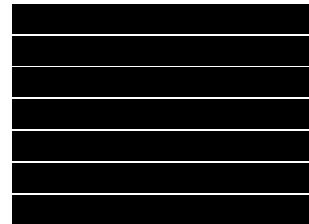
Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



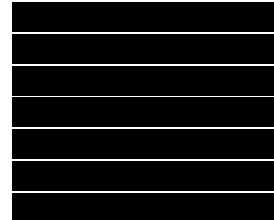
- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217543**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37693  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:23



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

			0908_MW147D_22051 7	0908_MW147S_22051 7	----	----	----	
Sampling date / time			17-May-2022 13:30	17-May-2022 13:15	----	----	----	
Compound	CAS Number	LOR	Unit	ES2217543-001 Result	ES2217543-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.03	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.13	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.03	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.05	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW147D_22051 7	0908_MW147S_22051 7	----	----	----
				17-May-2022 13:30	17-May-2022 13:15	----	----	----
Compound	CAS Number	LOR	Unit	ES2217543-001	ES2217543-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.25</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.16</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.22</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>108</b>	<b>102</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>75.3</b>	<b>75.8</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217543	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_220517,	0908_MW147S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_220517,	0908_MW147S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_220517,	0908_MW147S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_220517,	0908_MW147S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_220517,	0908_MW147S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217543</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37693 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



**CHAIN OF CUSTODY**  
 (ALS) COC#: 37662 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P Tom*  
 DATE TIME: *20/5/22 17:30*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW104D_220517	HDPE (no PTFE)	20 mL	00352010048117	Grey	No	
001	0908_MW104D_220517	HDPE (no PTFE)	20 mL	00350621036269	Grey	No	
001	0908_MW104D_220517	HDPE (no PTFE)	20 mL	00352010048160	Grey	No	
002	0908_MW104S_220517	HDPE (no PTFE)	20 mL	00350621021893	Grey	No	
002	0908_MW104S_220517	HDPE (no PTFE)	20 mL	00350621036357	Grey	No	
002	0908_MW104S_220517	HDPE (no PTFE)	20 mL	00350621022239	Grey	No	
003	0908_MW184D_220517	HDPE (no PTFE)	20 mL	00350621036340	Grey	No	
003	0908_MW184D_220517	HDPE (no PTFE)	20 mL	00352010028660	Grey	No	
003	0908_MW184D_220517	HDPE (no PTFE)	20 mL	00352010028526	Grey	No	
004	0908_MW184S_220517	HDPE (no PTFE)	20 mL	00350621034064	Grey	No	
004	0908_MW184S_220517	HDPE (no PTFE)	20 mL	00350621031660	Grey	No	
004	0908_MW184S_220517	HDPE (no PTFE)	20 mL	00350621034099	Grey	No	

**Total Bottle Count: ALS: 12, Non ALS: 0**

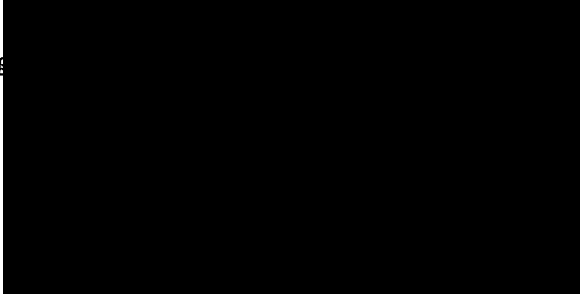
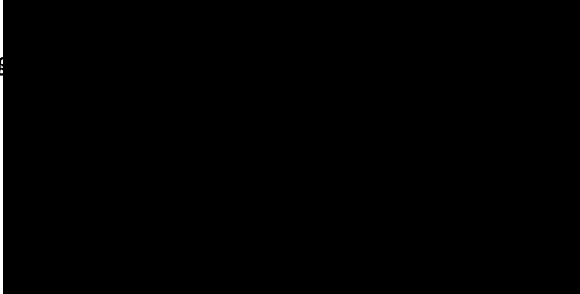
*ES 2217542*

*SV 51 - DP*





## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager:   
 Phone:   
 ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

<b>Special Instructions:</b> -37188    -37693    -37748    -37615    -37191 -37190    -37789    -37662    -37602    -37867 -37694    -37788    -37645    -37601    -37209 -37585	<b>ALS Use Only</b> Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A Random sample temperature on receipt?    2.5 °C
--	---

<b>Custody:</b>			
<b>Relinquished by:</b> AM <b>Date / Time:</b> 20.5.22 2:25	<b>Received by:</b> JN    20/5/22 <b>Date / Time:</b> 1430	<b>Relinquished by:</b> T.B. <b>Date / Time:</b> 20/5/22 5pm	<b>Received by:</b>  <b>Date / Time:</b>  

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7140



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217542

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
  
E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----  
  
Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1  
  
C-O-C number : 37662  
Site : WLM-R  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164  
  
E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500  
  
Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217542-001	17-May-2022 08:45	0908_MW104D_220517	✓
ES2217542-002	17-May-2022 08:45	0908_MW104S_220517	✓
ES2217542-003	17-May-2022 09:20	0908_MW184D_220517	✓
ES2217542-004	17-May-2022 09:10	0908_MW184S_220517	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

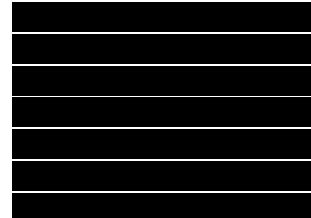
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



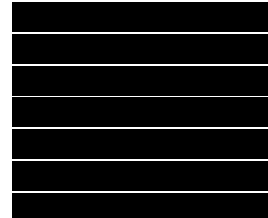
- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217542**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37662  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:29



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW104D_22051 7	0908_MW104S_22051 7	0908_MW184D_22051 7	0908_MW184S_22051 7	----
Sampling date / time					17-May-2022 08:45	17-May-2022 08:45	17-May-2022 09:20	17-May-2022 09:10	----
Compound	CAS Number	LOR	Unit	ES2217542-001	ES2217542-002	ES2217542-003	ES2217542-004	-----	----
				Result	Result	Result	Result	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.60	0.06	0.11	0.08	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.97	0.09	0.16	0.10	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	8.00	0.85	1.46	1.19	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.10	0.07	0.14	0.06	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	44.3	4.76	5.22	2.80	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.04	<0.02	<0.02	<0.02	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.3	<0.1	<0.1	<0.1	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.47	0.02	0.06	<0.02	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	2.48	0.14	0.38	0.08	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.45	0.03	0.08	<0.02	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.88	0.07	0.16	0.03	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW104D_22051 7	0908_MW104S_22051 7	0908_MW184D_22051 7	0908_MW184S_22051 7	----
Sampling date / time					17-May-2022 08:45	17-May-2022 08:45	17-May-2022 09:20	17-May-2022 09:10	----
Compound	CAS Number	LOR	Unit	ES2217542-001	ES2217542-002	ES2217542-003	ES2217542-004	-----	----
				Result	Result	Result	Result	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	59.6	6.09	7.77	4.34	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	52.3	5.61	6.68	3.99	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	57.5	5.93	7.47	4.18	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	103	111	104	106	----	
13C8-PFOA	----	0.02	%	82.8	72.5	75.1	75.7	----	





## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217542	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 4
Order number	: 60612562_2.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW104D_220517, 0908_MW184D_220517,	0908_MW104S_220517, 0908_MW184S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW104D_220517, 0908_MW184D_220517,	0908_MW104S_220517, 0908_MW184S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW104D_220517, 0908_MW184D_220517,	0908_MW104S_220517, 0908_MW184S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW104D_220517, 0908_MW184D_220517,	0908_MW104S_220517, 0908_MW184S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW104D_220517, 0908_MW184D_220517,	0908_MW104S_220517, 0908_MW184S_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	13-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217542</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37662 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 4 <b>No. of samples analysed</b> : 4	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138





Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

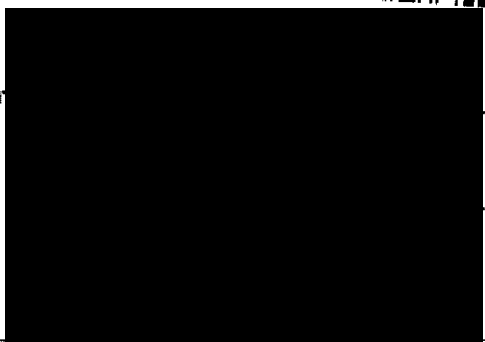


Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217541**



**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence Project Manager: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 ALS Compass COC Reference: 17x COC's # Samples: \_\_\_\_\_  
 below  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard Urgent \_\_\_\_\_



Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A
- 37190    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A
- 37694    - 37788    - 37645    - 37601    - 37209	Random sample temperature on receipt?    2.5 °C
- 37628    - 37585	

Custody:	
Relinquished by: <u>AM</u>	Received by: <u>JN</u> <u>20/5/22</u>
Date / Time: <u>20.5.22</u> <u>2:25</u>	Date / Time: <u>1430</u>
Relinquished by: <u>70'B</u>	Received by:
Date / Time: <u>20/5/22</u> <u>5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
 NEWCASTLE

PP 20/5/22 7:40

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37645 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tran*  
 DATE TIME: *20/5/22 19:50*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_POT085_20220516		16/05/2022 03:35 PM	Water	ALS: 3 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37645 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
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SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT085_20220516	HDPE (no PTFE)	20 mL	00350621036343	Grey	No	
001	0908_POT085_20220516	HDPE (no PTFE)	20 mL	00350621034236	Grey	No	
001	0908_POT085_20220516	HDPE (no PTFE)	20 mL	00350621036361	Grey	No	

**Total Bottle Count: ALS: 3, Non ALS: 0**



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217541

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37645  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 19:30  
Client Requested Due Date : 27-May-2022

Issue Date : 24-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217541-001	16-May-2022 15:35	0908_POT085_220516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

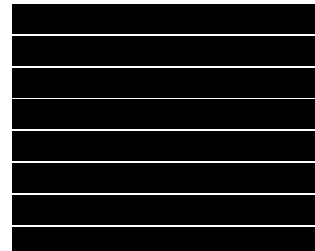
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217541**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37645  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 19:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:23



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_22051  
6

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Sampling date / time

16-May-2022 15:35

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Compound	CAS Number	LOR	Unit
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ES2217541-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_22051  
6

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Sampling date / time

16-May-2022 15:35

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Compound CAS Number LOR Unit

ES2217541-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	102	----	----	----	----
13C8-PFOA	----	0.02	%	80.8	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217541	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217541</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37645 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

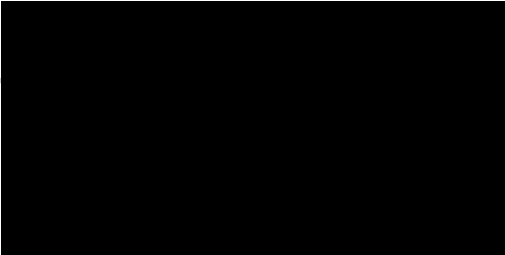
### Matrix Spike (MS) Report

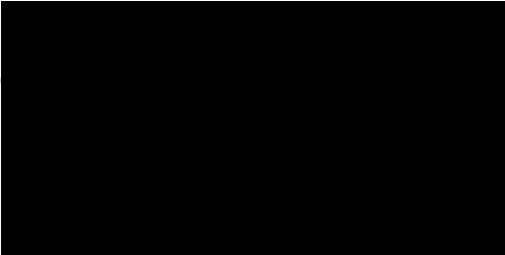
The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

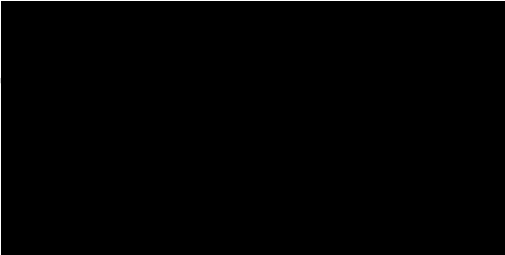
- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager: 

ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_ Sampler: 

Turnaround Requirements: Standard Urgent \_\_\_\_\_ Phone: 

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A
- 37190    - 37789    - 37662    - 37602    - 37867	<input checked="" type="checkbox"/> Free ice / frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A
- 37694    - 37788    - 37628    - 37601    - 37209	Random sample temperature on receipt?    2.5 °C
- 37694    - 37788    - 37628    - 37585	

Custody:	
Relinquished by: <u>CM</u>	Received by: <u>JN</u> <u>20/5/22</u>
Date / Time: <u>20.5.22</u> <u>2:25</u>	Date / Time: <u>14:30</u>
Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20/5/22</u> <u>5pm</u>	Date / Time:

**E-MAILED**  
LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7:40

RELINQUISHED BY:	RECEIVED BY: <i>R. Tran</i>	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 20/5/22 19:30	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	°C		
Other comments:			

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW230S_220516		16/05/2022 01:45 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217540**



Telephone : + 61-2-9784 8555

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37628 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW230S_220516	HDPE (no PTFE)	20 mL	00350621021745	Grey	No	
001	0908_MW230S_220516	HDPE (no PTFE)	20 mL	00350621057924	Grey	No	
001	0908_MW230S_220516	HDPE (no PTFE)	20 mL	00350621057920	Grey	No	

**Total Bottle Count: ALS: 3, Non ALS: 0**



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217540

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37628  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 19:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217540-001	16-May-2022 13:45	0908_MW230S_220516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217540**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37628  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 19:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:22



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_22051  
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Sampling date / time

16-May-2022 13:45

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Compound CAS Number LOR Unit

ES2217540-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_22051  
6

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Sampling date / time

16-May-2022 13:45

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Compound

CAS Number

LOR

Unit

ES2217540-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	94.9	----	----	----	----
13C8-PFOA	----	0.02	%	82.5	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217540	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**





### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217540</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37628 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

**ALS CHAIN OF CUSTODY**  
 COC#: 37615 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tran*  
 DATE TIME: 20/5/22 19:30

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

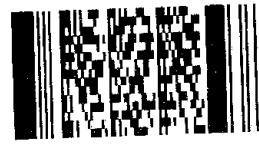
TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
<del>001</del>	<del>0908_MW238S_220516</del>		16/05/2022 12:04 PM	Water	ALS: 3 Non ALS: 0	No	X		
<del>002</del>	<del>0908_MW238D_220516</del>		16/05/2022 12:38 PM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217539**



Telephone: +61-2-8784 8555





# CHAIN OF CUSTODY

COC#: 37615 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

### LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW238S_220516	HDPE (no PTFE)	20 mL	00350621022120	Grey	No	
001	0908_MW238S_220516	HDPE (no PTFE)	20 mL	00350621022024	Grey	No	
001	0908_MW238S_220516	HDPE (no PTFE)	20 mL	00350621021823	Grey	No	
002	0908_MW238D_220516	HDPE (no PTFE)	20 mL	00350621036292	Grey	No	
002	0908_MW238D_220516	HDPE (no PTFE)	20 mL	00350621057845	Grey	No	
002	0908_MW238D_220516	HDPE (no PTFE)	20 mL	00350621021894	Grey	No	


**Total Bottle Count: ALS: 6, Non ALS: 0**

SY051 - AP 20/5



Telephone : + 61-2-8784 8555

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager: 

ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
Phone: \_\_\_\_\_

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A
- 37190    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A
- 37694    - 37788    - 37628    - 37601    - 37209	Random sample temperature on receipt?    2.5 °C
- 37585	

Custody:			
Relinquished by: <u>AM</u>	Received by: <u>JN</u>	Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>	Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7340



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217539

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37615  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217539-001	16-May-2022 12:04	0908_MW238S_220516	✓
ES2217539-002	16-May-2022 12:38	0908_MW238D_220516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217539**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37615  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:23



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

			0908_MW238S_22051 6	0908_MW238D_22051 6	----	----	----	
Sampling date / time			16-May-2022 12:04	16-May-2022 12:38	----	----	----	
Compound	CAS Number	LOR	Unit	ES2217539-001 Result	ES2217539-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238S_22051 6	0908_MW238D_22051 6	----	----	----
Sampling date / time				16-May-2022 12:04	16-May-2022 12:38	----	----	----
Compound	CAS Number	LOR	Unit	ES2217539-001 Result	ES2217539-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	101	93.6	----	----	----
13C8-PFOA	----	0.02	%	86.4	86.4	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217539	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238S_220516,	0908_MW238D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238S_220516,	0908_MW238D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW238S_220516,	0908_MW238D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238S_220516,	0908_MW238D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW238S_220516,	0908_MW238D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217539</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37615 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



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## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**
-





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

**CHAIN OF CUSTODY**  
**ALS** COC#: 37602 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tom*  
 DATE TIME: 20/5/22 19:20

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW271S_220516		16/05/2022 10:45 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW271D_220516		16/05/2022 10:55 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217538**



Telephone : + 61-2-9794 8555

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37602 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFIASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW271S_220516	HDPE (no PTFE)	20 mL	00350621057681	Grey	No	
001	0908_MW271S_220516	HDPE (no PTFE)	20 mL	00350621057730	Grey	No	
001	0908_MW271S_220516	HDPE (no PTFE)	20 mL	00350621022109	Grey	No	
002	0908_MW271D_220516	HDPE (no PTFE)	20 mL	00352010048046	Grey	No	
002	0908_MW271D_220516	HDPE (no PTFE)	20 mL	00350621021863	Grey	No	
002	0908_MW271D_220516	HDPE (no PTFE)	20 mL	00352010028514	Grey	No	

**Total Bottle Count: ALS: 6, Non ALS: 0**

SY051 RP 201  
 5





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217538

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37602  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217538-001	16-May-2022 10:45	0908_MW271S_220516	✓
ES2217538-002	16-May-2022 10:55	0908_MW271D_220516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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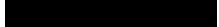


### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217538**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37602  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:27



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_22051 6	0908_MW271D_22051 6	----	----	----
Sampling date / time				16-May-2022 10:45	16-May-2022 10:55	----	----	----
Compound	CAS Number	LOR	Unit	ES2217538-001 Result	ES2217538-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_22051 6	0908_MW271D_22051 6	----	----	----
				16-May-2022 10:45	16-May-2022 10:55	----	----	----
Compound	CAS Number	LOR	Unit	ES2217538-001	ES2217538-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.06</b>	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.03</b>	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.06</b>	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.3</b>	<b>93.5</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>81.8</b>	<b>84.6</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217538	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_220516,	0908_MW271D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_220516,	0908_MW271D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_220516,	0908_MW271D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_220516,	0908_MW271D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_220516,	0908_MW271D_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217538</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37602 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138	



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

# CHAIN OF CUSTODY

ALS COC#: 37601 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM-R

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY: P. Tran

DATE TIME: 20/5/2022 9:30

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

### LABORATORY USE ONLY (Circle)

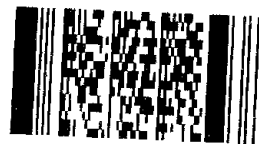
Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_POT144_220516		16/05/2022 09:45 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217537** 7



Telephone : + 61-2-8784 8555

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37601 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_POT144_220516	HDPE (no PTFE)	20 mL	00350621021900 ✓	Grey	No	
001	0908_POT144_220516	HDPE (no PTFE)	20 mL	00350621021779 ✓	Grey	No	
001	0908_POT144_220516	HDPE (no PTFE)	20 mL	00352010028696 ✓	Grey	No	

**Total Bottle Count: ALS: 3, Non ALS: 0**

SY051  
 PP



Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217537**



Telephone : + 61-2-6784 8666

**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: Defence Project Manager: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 ALS Compass CDC Reference: 17x COCs below # Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES    NO    N/A
- 37190    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES    NO    N/A
- 37694    - 37788    - 37645    - 37585    - 37209	Random sample temperature on receipt?    2.5 °C

Custody:	
Relinquished by: <u>AM</u>	Received by: <u>JN</u>
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>
Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**  
 LAB OF ORIGIN:  
 NEWCASTLE

PP 20/5/22 7240





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217537

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37601

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : WLM-R

Sampler : [REDACTED]

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217537-001	16-May-2022 09:45	0908_POT144_220516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
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- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217537**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37601  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 27-May-2022 11:22



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT144\_22051  
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Sampling date / time

16-May-2022 09:45

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Compound CAS Number LOR Unit

ES2217537-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: POTABLE WATER  
 (Matrix: WATER)

Sample ID

0908\_POT144\_22051  
6

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Sampling date / time

16-May-2022 09:45

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Compound CAS Number LOR Unit

ES2217537-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	94.2	----	----	----	----
13C8-PFOA	----	0.02	%	89.2	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: POTABLE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217537	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 27-May-2022
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_220516	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217537</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37601 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 1 <b>No. of samples analysed</b> : 1	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 27-May-2022
--	---



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360160)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	110	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	111	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360160)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	125	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360160)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	111	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	105	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360160) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	120	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



**CHAIN OF CUSTODY**  
 (ALS) COC#: 37585 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tan*  
 DATE/TIME: *16/5/22 19:30*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW236S_220516		16/05/2022 09:35 AM	Water	ALS: 2 Non ALS: 0	No	X		
002	0908_MW236D_220516		16/05/2022 09:50 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217536**



Telephone : + 61-2-8784 8555

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37585 ALS Laboratory: ES Sydney

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM-R  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

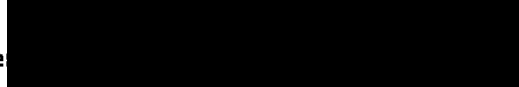
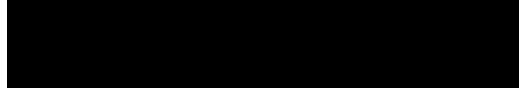
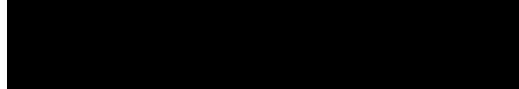
SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW236S_220516	HDPE (no PTFE)	20 mL	00350621022216	Grey	No	
001	0908_MW236S_220516	HDPE (no PTFE)	20 mL	00350621022123	Grey	No	
002	0908_MW236D_220516	HDPE (no PTFE)	20 mL	00350621057811	Grey	No	
002	0908_MW236D_220516	HDPE (no PTFE)	20 mL	00350621057806	Grey	No	
002	0908_MW236D_220516	HDPE (no PTFE)	20 mL	00350621021946	Grey	No	

**Total Bottle Count: ALS: 5, Non ALS: 0**



Telephone : + 61-2-8794 6556

## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager:   
 ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_ Sampler:   
 Turnaround Requirements: Standard Urgent \_\_\_\_\_ Phone: 

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES NO N/A
- 37192    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES NO N/A
- 37694    - 37788    - 37645    - 37585    - 37209	Random sample temperature on receipt? <u>2-5</u> °C

Custody:			
Relinquished by: <u>CM</u>	Received by: <u>JN</u>	Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>	Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7:40



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217536

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37585  
Site : WLM-R  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217536-001	16-May-2022 09:35	0908_MW236S_220516	✓
ES2217536-002	16-May-2022 09:50	0908_MW236D_220516	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email

Email

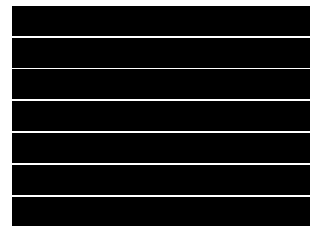
Email

Email

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Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

Email

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Email



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217536**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37585  
**Sampler** : [REDACTED]  
**Site** : WLM-R  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 23-May-2022  
**Issue Date** : 26-May-2022 14:22



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236S_22051 6	0908_MW236D_22051 6	----	----	----
Sampling date / time				16-May-2022 09:35	16-May-2022 09:50	----	----	----
Compound	CAS Number	LOR	Unit	ES2217536-001 Result	ES2217536-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236S_22051 6	0908_MW236D_22051 6	----	----	----
Sampling date / time				16-May-2022 09:35	16-May-2022 09:50	----	----	----
Compound	CAS Number	LOR	Unit	ES2217536-001 Result	ES2217536-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	104	----	----	----
13C8-PFOA	----	0.02	%	87.3	85.0	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217536	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM-R	Issue Date	: 26-May-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	18	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	18	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_220516,	0908_MW236D_220516	16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_220516,	0908_MW236D_220516	16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_220516,	0908_MW236D_220516	16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_220516,	0908_MW236D_220516	16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW236S_220516,	0908_MW236D_220516	16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	18	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	18	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217536</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37585 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM-R <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 4  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 26-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4358487)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	120	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	112	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	112	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4358487)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	120	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	117	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	122	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	82.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4358487)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	120	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	106	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.5	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	118	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4358487)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	119	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	120	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	109	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						Acceptable Limits (%)	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4358487) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	126	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



# CHAIN OF CUSTODY

ALS AC# 37191 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

*P. Tran*  
9/2/20 19:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SS

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	
							PFAS Soil - New Analysis SOIL	ALTERNATIVE ANALYSIS
001	0908_SS101_220516		16/05/2022 02:50 PM	Soil	ALS: 1 Non ALS: 0	No	X	
002	0908_SS102_220516		16/05/2022 02:25 PM	Soil	ALS: 1 Non ALS: 0	No	X	
003	0908_SS103_220516		16/05/2022 02:05 PM	Soil	ALS: 1 Non ALS: 0	No	X	
004	0908_SS104_220516		16/05/2022 01:55 PM	Soil	ALS: 1 Non ALS: 0	No	X	
005	0908_SS105_220516		16/05/2022 01:45 PM	Soil	ALS: 1 Non ALS: 0	No	X	
006	0908_SS106_220516		16/05/2022 03:49 PM	Soil	ALS: 1 Non ALS: 0	No	X	
007	0908_SS107_220518		18/05/2022 02:30 PM	Soil	ALS: 1 Non ALS: 0	No	X	
008	0908_SS108_220517		17/05/2022 09:45 AM	Soil	ALS: 1 Non ALS: 0	No	X	
009	0908_SS111_220516		16/05/2022 12:35 PM	Soil	ALS: 1 Non ALS: 0	No	X	

Environmental Division  
Sydney

Work Order Reference

ES2217535



Telephone : +61-2-9784 8555



# CHAIN OF CUSTODY

ALC# 37191 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SS

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

RELINQUISHED BY:

DATE TIME:

RECEIVED BY:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		
							PFAS Soil - New Analysis SOIL	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0908_SS112_220516		16/05/2022 12:55 PM	Soil	ALS: 1 Non ALS: 0	No	X		
011	0908_QC101_220516		16/05/2022 02:25 PM	Soil	ALS: 1 Non ALS: 0	No	X		
012	0908_SS110_220516		16/05/2022 01:15 PM	Soil	ALS: 1 Non ALS: 0	No	X		



# CHAIN OF CUSTODY

ALS LOC#: 37191

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SS

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SS101_220516	HDPE Soil Jar	200 mL	00620719056247 ✓	Grey	No	
002	0908_SS102_220516	HDPE Soil Jar	200 mL	00621019080403 ✓	Grey	No	
003	0908_SS103_220516	HDPE Soil Jar	200 mL	00620719055176 ✓	Grey	No	
004	0908_SS104_220516	HDPE Soil Jar	200 mL	00620719055167 ✓	Grey	No	
005	0908_SS105_220516	HDPE Soil Jar	200 mL	00620719057365 ✓	Grey	No	
006	0908_SS106_220516	HDPE Soil Jar	200 mL	00620719057305 ✓	Grey	No	
007	0908_SS107_220518	HDPE Soil Jar	200 mL	00621019080353 ✓	Grey	No	
008	0908_SS108_220517	HDPE Soil Jar	200 mL	00621019053889 ✓	Grey	No	
009	0908_SS111_220516	HDPE Soil Jar	200 mL	00621019053997 ✓	Grey	No	
010	0908_SS112_220516	HDPE Soil Jar	200 mL	00620719055157 ✓	Grey	No	
011	0908_QC101_220516	HDPE Soil Jar	200 mL	00620719055228 ✓	Grey	No	
012	0908_SS110_220516	HDPE Soil Jar	200 mL	00620719055154 ✓	Grey	No	

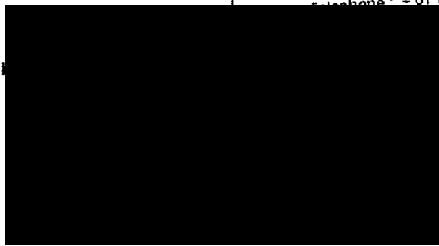
**Total Bottle Count: ALS: 12, Non ALS: 0**



Environmental Division  
Sydney  
Work Order Reference  
ES2217535



Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager:   
 ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_  
 Turnaround Requirements: Standard Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188    - 37693    - 37748    - 37615    - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES NO N/A
- 37190    - 37789    - 37662    - 37602    - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES NO N/A
- 37694    - 37788    - 37628    - 37585    - 37209	Random sample temperature on receipt? 2.5 °C

Custody:	
Relinquished by: <u>AM</u>	Received by: <u>JN</u>
Date / Time: <u>20.5.22 2:25</u>	Date / Time: <u>20/5/22 1430</u>
Relinquished by: <u>TOB</u>	Received by:
Date / Time: <u>20/5/22 5pm</u>	Date / Time:

**E-MAILED**

LAB OF ORIGIN:  
NEWCASTLE

PP 20/5/22 7340



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217535

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37191  
Site : WLM\_SS  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022

Issue Date : 21-May-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 12 / 12

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2217535-001	16-May-2022 14:50	0908_SS101_220516	✓	✓
ES2217535-002	16-May-2022 14:25	0908_SS102_220516	✓	✓
ES2217535-003	16-May-2022 14:05	0908_SS103_220516	✓	✓
ES2217535-004	16-May-2022 13:55	0908_SS104_220516	✓	✓
ES2217535-005	16-May-2022 13:45	0908_SS105_220516	✓	✓
ES2217535-006	16-May-2022 15:49	0908_SS106_220516	✓	✓
ES2217535-007	18-May-2022 14:30	0908_SS107_220518	✓	✓
ES2217535-008	17-May-2022 09:45	0908_SS108_220517	✓	✓
ES2217535-009	16-May-2022 12:35	0908_SS111_220516	✓	✓
ES2217535-010	16-May-2022 12:55	0908_SS112_220516	✓	✓
ES2217535-011	16-May-2022 14:25	0908_QC101_220516	✓	✓
ES2217535-012	16-May-2022 13:15	0908_SS110_220516	✓	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

Email  
Email  
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Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
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- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2217535**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : 17 WARABROOK BLVD  
 NEWCASTLE Newcastle 2304  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 37191  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM\_SS  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 12  
**No. of samples analysed** : 12

**Page** : 1 of 11  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 20-May-2022 14:30  
**Date Analysis Commenced** : 25-May-2022  
**Issue Date** : 27-May-2022 11:26



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SS108_220517	----	----	----	----
		Sampling date / time		17-May-2022 09:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2217535-008	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	15.5	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0009	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0043	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0010	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0008	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0908_SS108_220517	----	----	----	----
Sampling date / time			17-May-2022 09:45	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2217535-008	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0070	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0052	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0060	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	102	----	----	----	----
13C8-PFOA	----	0.0002	%	103	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS101_220516	0908_SS102_220516	0908_SS103_220516	0908_SS104_220516	0908_SS105_220516
Sampling date / time				16-May-2022 14:50	16-May-2022 14:25	16-May-2022 14:05	16-May-2022 13:55	16-May-2022 13:45	
Compound	CAS Number	LOR	Unit	ES2217535-001	ES2217535-002	ES2217535-003	ES2217535-004	ES2217535-005	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	30.9	29.3	18.3	23.7	21.5	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	0.0008	<0.0002	<0.0002	<0.0002	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0023	0.0149	0.0010	0.0004	0.0006	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS101_220516	0908_SS102_220516	0908_SS103_220516	0908_SS104_220516	0908_SS105_220516
Sampling date / time				16-May-2022 14:50	16-May-2022 14:25	16-May-2022 14:05	16-May-2022 13:55	16-May-2022 13:45	
Compound	CAS Number	LOR	Unit	ES2217535-001	ES2217535-002	ES2217535-003	ES2217535-004	ES2217535-005	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0025	0.0165	0.0010	0.0004	0.0006	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0025	0.0157	0.0010	0.0004	0.0006	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0025	0.0165	0.0010	0.0004	0.0006	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	90.0	102	94.5	96.0	110	
13C8-PFOA	----	0.0002	%	91.5	95.5	101	100	98.0	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS106_220516	0908_SS107_220518	0908_SS111_220516	0908_SS112_220516	0908_QC101_220516
Sampling date / time				16-May-2022 15:49	18-May-2022 14:30	16-May-2022 12:35	16-May-2022 12:55	16-May-2022 14:25	
Compound	CAS Number	LOR	Unit	ES2217535-006	ES2217535-007	ES2217535-009	ES2217535-010	ES2217535-011	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	26.0	15.7	31.7	24.4	28.6	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0003	0.0002	<0.0002	<0.0002	0.0007	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0017	0.0299	0.0002	0.0021	0.0132	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS106_220516	0908_SS107_220518	0908_SS111_220516	0908_SS112_220516	0908_QC101_220516
Sampling date / time				16-May-2022 15:49	18-May-2022 14:30	16-May-2022 12:35	16-May-2022 12:55	16-May-2022 14:25	
Compound	CAS Number	LOR	Unit	ES2217535-006	ES2217535-007	ES2217535-009	ES2217535-010	ES2217535-011	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0020	0.0301	0.0002	0.0021	0.0149	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0020	0.0301	0.0002	0.0021	0.0139	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0020	0.0301	0.0002	0.0021	0.0149	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	92.5	97.5	94.5	93.5	95.5	
13C8-PFOA	----	0.0002	%	100	98.0	108	97.0	96.5	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		0908_SS110_220516	----	----	----	----
		Sampling date / time		16-May-2022 13:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2217535-012	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	39.1	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0006	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0294	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0009	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	0908_SS110_220516	----	----	----	----
Sampling date / time			16-May-2022 13:15	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2217535-012	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	0.0309	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0300	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0300	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	94.0	----	----	----	----
13C8-PFOA	----	0.0002	%	93.5	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SOIL</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217535	Page	: 1 of 6
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM_SS	Issue Date	: 27-May-2022
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 12
Order number	: 60612562_2.1	No. of samples analysed	: 12

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**



### Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Moisture Content	1	12	8.33	10.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	----	----	----	25-May-2022	30-May-2022	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SS108_220517		17-May-2022	----	----	----	25-May-2022	31-May-2022	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SS107_220518		18-May-2022	----	----	----	25-May-2022	01-Jun-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS108_220517		17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS107_220518		18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS108_220517		17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS107_220518		18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS108_220517		17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS107_220518		18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS108_220517		17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS107_220518		18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓





Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SS101_220516, 0908_SS103_220516, 0908_SS105_220516, 0908_SS111_220516, 0908_QC101_220516,	0908_SS102_220516, 0908_SS104_220516, 0908_SS106_220516, 0908_SS112_220516, 0908_SS110_220516	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS108_220517		17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SS107_220518		18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	12	8.33	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2217535</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37191 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_SS <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 12 <b>No. of samples analysed</b> : 12	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 <b>Date Analysis Commenced</b> : 25-May-2022 <b>Issue Date</b> : 27-May-2022
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4359175)</b>									
ES2217535-003	0908_SS103_220516	EA055: Moisture Content	----	0.1	%	18.3	18.0	1.8	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4360940)</b>									
ES2217535-001	0908_SS101_220516	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0023	0.0022	0.0	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2217535-011	0908_QC101_220516	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0006	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0132	0.0133	1.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360940)</b>									
ES2217535-001	0908_SS101_220516	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360940) - continued</b>									
ES2217535-001	0908_SS101_220516	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2217535-011	0908_QC101_220516	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0008	0.0006	15.7	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4360940)</b>									
ES2217535-001	0908_SS101_220516	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2217535-011	0908_QC101_220516	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4360940)</b>									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4360940) - continued</b>									
ES2217535-001	0908_SS101_220516	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2217535-011	0908_QC101_220516	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360940)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	126	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360940)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	90.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	127	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	126	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	114	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360940)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	116	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	118	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360940)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	114	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	121	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	122	65.0	137





Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360940) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	69.2	143

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360940)</b>							
ES2217535-001	0908_SS101_220516	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	123	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	90.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	118	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	118	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	108	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	121	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360940)</b>							
ES2217535-001	0908_SS101_220516	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	128	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	125	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	117	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	120	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	123	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	129	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	97.2	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	104	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	115	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360940)</b>							
ES2217535-001	0908_SS101_220516	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	120	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	97.1	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	120	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	126	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.8	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	120	63.0	144



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360940) - continued</b>							
ES2217535-001	0908_SS101_220516	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	117	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360940)</b>							
ES2217535-001	0908_SS101_220516	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	114	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	126	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	131	69.2	143

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_SW-SD\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tom*  
 DATE TIME: 18/05/22 19:00

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_SD001_220518		18/05/2022 10:45 AM	Soil	ALS: 1 Non ALS: 0	No	X			
002	0908_SD005_220518		18/05/2022 09:35 AM	Soil	ALS: 1 Non ALS: 0	No	X			
003	0908_SD006_220518		18/05/2022 11:15 AM	Soil	ALS: 1 Non ALS: 0	No	X			
004	0908_SD007_220518		18/05/2022 11:00 AM	Soil	ALS: 1 Non ALS: 0	No	X			
005	0908_SD009_220517		17/05/2022 11:25 AM	Soil	ALS: 1 Non ALS: 0	No	X			
006	0908_SD014_220516		16/05/2022 02:45 PM	Soil	ALS: 1 Non ALS: 0	No	X			
007	0908_SD023_220517		17/05/2022 10:01 AM	Soil	ALS: 1 Non ALS: 0	No	X			
008	0908_SD024_220516		16/05/2022 03:20 PM	Soil	ALS: 1 Non ALS: 0	No	X			
009	0908_SD047_220519		19/05/2022 01:36 PM	Soil	ALS: 1 Non ALS: 0	No	X			

Environmental Division  
 Sydney  
 Work Order Reference

**ES2217534**



Telephone : + 61-2-8764 8555

# CHAIN OF CUSTODY

ALS COC#: 37190 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

### LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
010	0908_SD048_220519		19/05/2022 12:54 PM	Soil	ALS: 1 Non ALS: 0	No	X			
011	0908_SD055_220519		19/05/2022 11:13 AM	Soil	ALS: 1 Non ALS: 0	No	X			
012	0908_SD059_220517		17/05/2022 09:55 AM	Soil	ALS: 1 Non ALS: 0	No	X			
013	0908_SD060_220518		18/05/2022 02:40 PM	Soil	ALS: 1 Non ALS: 0	No	X			
014	0908_SD062_220516		16/05/2022 01:15 PM	Soil	ALS: 1 Non ALS: 0	No	X			
015	0908_SD079_220516		16/05/2022 12:14 PM	Soil	ALS: 1 Non ALS: 0	No	X			
016	0908_SD081_220516		16/05/2022 12:55 PM	Soil	ALS: 1 Non ALS: 0	No	X			
017	0908_SD110_220519		19/05/2022 09:18 AM	Soil	ALS: 1 Non ALS: 0	No	X			
018	0908_SW001_220518		18/05/2022 10:45 AM	Water	ALS: 3 Non ALS: 0	No		X		

Friday, May 20, 2022

4:25:00 AM

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
020	0908_SW006_220518		18/05/2022 11:10 AM	Water	ALS: 3 Non ALS: 0	No		X		
021	0908_SW007_220518		18/05/2022 10:55 AM	Water	ALS: 3 Non ALS: 0	No		X		
022	0908_SW009_220517		17/05/2022 11:25 AM	Water	ALS: 3 Non ALS: 0	No		X		
023	0908_SW014_220516		16/05/2022 02:45 PM	Water	ALS: 3 Non ALS: 0	No		X		
024	0908_SW023_220517		17/05/2022 10:50 AM	Water	ALS: 3 Non ALS: 0	No		X		
025	0908_SW024_220516		16/05/2022 03:20 PM	Water	ALS: 3 Non ALS: 0	No		X		
026	0908_SW047_220519		19/05/2022 01:28 PM	Water	ALS: 3 Non ALS: 0	No		X		
027	0908_SW048_220519		19/05/2022 12:53 PM	Water	ALS: 3 Non ALS: 0	No		X		

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0908_SW055_220519		19/05/2022 11:00 AM	Water	ALS: 3 Non ALS: 0	No		X		
029	0908_SW059_220517		17/05/2022 09:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
030	0908_SW060_220518		18/05/2022 02:50 PM	Water	ALS: 3 Non ALS: 0	No		X		
031	0908_SW062_220516		16/05/2022 01:15 PM	Water	ALS: 3 Non ALS: 0	No		X		
032	0908_SW079_220516		16/05/2022 12:05 PM	Water	ALS: 3 Non ALS: 0	No		X		
033	0908_SW081_220516		16/05/2022 01:00 PM	Water	ALS: 3 Non ALS: 0	No		X		
034	0908_SW108_220519		19/05/2022 09:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
035	0908_SW110_220519		19/05/2022 09:10 AM	Water	ALS: 3 Non ALS: 0	No		X		
036	0908_QC103_220517		17/05/2022 09:45 AM	Water	ALS: 3 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_QC105_220517		17/05/2022 11:25 AM	Soil	ALS: 1 Non ALS: 0	No	X			
038	0908_QC110_220519		19/05/2022 09:45 AM	Water	ALS: 3 Non ALS: 0	No		X		
039	0908_QC109_220519		19/05/2022 09:45 AM	Soil	ALS: 1 Non ALS: 0	No	X			
040	0908_QC111_220519		19/05/2022 11:00 AM	Water	ALS: 3 Non ALS: 0	No		X		
041	0908_SD108_220519		19/05/2022 09:45 AM	Soil	ALS: 1 Non ALS: 0	No	X			

**CHAIN OF CUSTODY**

(ALS) COC#: 37190 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_SW-SD\_1  
 ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SD001_220518	HDPE Soil Jar	200 mL	00621019080377	Grey	No	
002	0908_SD005_220518	HDPE Soil Jar	200 mL	00621121013633	Grey	No	
003	0908_SD006_220518	HDPE Soil Jar	200 mL	00621019080404	Grey	No	
004	0908_SD007_220518	HDPE Soil Jar	200 mL	00621019080340	Grey	No	
005	0908_SD009_220517	HDPE Soil Jar	200 mL	00620719047846	Grey	No	
006	0908_SD014_220516	HDPE Soil Jar	200 mL	00621019080382	Grey	No	
007	0908_SD023_220517	HDPE Soil Jar	200 mL	00620719055264	Grey	No	
008	0908_SD024_220516	HDPE Soil Jar	200 mL	00621019053909	Grey	No	
009	0908_SD047_220519	HDPE Soil Jar	200 mL	00620719055239	Grey	No	
010	0908_SD048_220519	HDPE Soil Jar	200 mL	00620719055277	Grey	No	
011	0908_SD055_220519	HDPE Soil Jar	200 mL	00620719040354	Grey	No	
012	0908_SD059_220517	HDPE Soil Jar	200 mL	00621019080383	Grey	No	
013	0908_SD060_220518	HDPE Soil Jar	200 mL	00621019053903	Grey	No	
014	0908_SD062_220516	HDPE Soil Jar	200 mL	00621019062835	Grey	No	
015	0908_SD079_220516	HDPE Soil Jar	200 mL	00620719055190	Grey	No	
016	0908_SD081_220516	HDPE Soil Jar	200 mL	00620719055196	Grey	No	
017	0908_SD110_220519	HDPE Soil Jar	200 mL	00620719055227	Grey	No	
018	0908_SW001_220518	HDPE (no PTFE)	20 mL	00350621036555	Grey	No	
018	0908_SW001_220518	HDPE (no PTFE)	20 mL	00350621036520	Grey	No	
018	0908_SW001_220518	HDPE (no PTFE)	20 mL	00350621036625	Grey	No	
019	0908_SW005_220518	HDPE (no PTFE)	20 mL	00350621036486	Grey	No	
019	0908_SW005_220518	HDPE (no PTFE)	20 mL	00350621036756	Grey	No	
019	0908_SW005_220518	HDPE (no PTFE)	20 mL	00350621036993	Grey	No	
020	0908_SW006_220518	HDPE (no PTFE)	20 mL	00350621036602	Grey	No	
020	0908_SW006_220518	HDPE (no PTFE)	20 mL	00350621036773	Grey	No	
020	0908_SW006_220518	HDPE (no PTFE)	20 mL	00350621036789	Grey	No	

Friday, May 20, 2022 4:25:00 AM





# CHAIN OF CUSTODY

COCH#: 37190

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

021	0908_SW007_220518	HDPE (no PTFE)	20 mL	00350621036844	Grey	No	
021	0908_SW007_220518	HDPE (no PTFE)	20 mL	00350621036829	Grey	No	
021	0908_SW007_220518	HDPE (no PTFE)	20 mL	00350621036771	Grey	No	
022	0908_SW009_220517	HDPE (no PTFE)	20 mL	00352010050455	Grey	No	
022	0908_SW009_220517	HDPE (no PTFE)	20 mL	00352010028615	Grey	No	
022	0908_SW009_220517	HDPE (no PTFE)	20 mL	00352010028578	Grey	No	
023	0908_SW014_220516	HDPE (no PTFE)	20 mL	00352010048103	Grey	No	
023	0908_SW014_220516	HDPE (no PTFE)	20 mL	00352010048165	Grey	No	
023	0908_SW014_220516	HDPE (no PTFE)	20 mL	00350621021926	Grey	No	
024	0908_SW023_220517	HDPE (no PTFE)	20 mL	00350621036286	Grey	No	
024	0908_SW023_220517	HDPE (no PTFE)	20 mL	00350621036397	Grey	No	
024	0908_SW023_220517	HDPE (no PTFE)	20 mL	00352010028630	Grey	No	
025	0908_SW024_220516	HDPE (no PTFE)	20 mL	00352010048041	Grey	No	
025	0908_SW024_220516	HDPE (no PTFE)	20 mL	00350621057634	Grey	No	
025	0908_SW024_220516	HDPE (no PTFE)	20 mL	00350621057593	Grey	No	
026	0908_SW047_220519	HDPE (no PTFE)	20 mL	00350621036504	Grey	No	
026	0908_SW047_220519	HDPE (no PTFE)	20 mL	00350621036601	Grey	No	
026	0908_SW047_220519	HDPE (no PTFE)	20 mL	00350621036618	Grey	No	
027	0908_SW048_220519	HDPE (no PTFE)	20 mL	00350621031794	Grey	No	
027	0908_SW048_220519	HDPE (no PTFE)	20 mL	00352010028736	Grey	No	
027	0908_SW048_220519	HDPE (no PTFE)	20 mL	00350621032087	Grey	No	
028	0908_SW055_220519	HDPE (no PTFE)	20 mL	00350621036803	Grey	No	
028	0908_SW055_220519	HDPE (no PTFE)	20 mL	00350621036763	Grey	No	
028	0908_SW055_220519	HDPE (no PTFE)	20 mL	00350621036936	Grey	No	
029	0908_SW059_220517	HDPE (no PTFE)	20 mL	00352010021649	Grey	No	
029	0908_SW059_220517	HDPE (no PTFE)	20 mL	00350621036257	Grey	No	
029	0908_SW059_220517	HDPE (no PTFE)	20 mL	00352010021664	Grey	No	

**CHAIN OF CUSTODY**

ALS COC#: 37190 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
PROJECT: NSW\_0908\_PFSOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

ID	Sample ID	Material	Volume	Barcode	Color	Seal
030	0908_SW060_220518	HDPE (no PTFE)	20 mL	00350621022053	Grey	No
030	0908_SW060_220518	HDPE (no PTFE)	20 mL	00350621036553	Grey	No
030	0908_SW060_220518	HDPE (no PTFE)	20 mL	00350621036868	Grey	No
031	0908_SW062_220516	HDPE (no PTFE)	20 mL	00352010025862	Grey	No
031	0908_SW062_220516	HDPE (no PTFE)	20 mL	00352010025999	Grey	No
032	0908_SW079_220516	HDPE (no PTFE)	20 mL	00350621022296	Grey	No
032	0908_SW079_220516	HDPE (no PTFE)	20 mL	00350621021751	Grey	No
032	0908_SW079_220516	HDPE (no PTFE)	20 mL	00350621022189	Grey	No
033	0908_SW081_220516	HDPE (no PTFE)	20 mL	00350621022129	Grey	No
033	0908_SW081_220516	HDPE (no PTFE)	20 mL	00352010048105	Grey	No
033	0908_SW081_220516	HDPE (no PTFE)	20 mL	00350621022270	Grey	No
034	0908_SW108_220519	HDPE (no PTFE)	20 mL	00352010028595	Grey	No
034	0908_SW108_220519	HDPE (no PTFE)	20 mL	00350621036711	Grey	No
034	0908_SW108_220519	HDPE (no PTFE)	20 mL	00350621036482	Grey	No
035	0908_SW110_220519	HDPE (no PTFE)	20 mL	00350621036728	Grey	No
035	0908_SW110_220519	HDPE (no PTFE)	20 mL	00350621036456	Grey	No
035	0908_SW110_220519	HDPE (no PTFE)	20 mL	00350621036536	Grey	No
036	0908_QC103_220517	HDPE (no PTFE)	20 mL	00350621036750	Grey	No
036	0908_QC103_220517	HDPE (no PTFE)	20 mL	00350621021813	Grey	No
036	0908_QC103_220517	HDPE (no PTFE)	20 mL	00350621021814	Grey	No
037	0908_QC105_220517	HDPE Soil Jar	20 mL	00350621057921	Grey	No
038	0908_QC110_220519	HDPE (no PTFE)	200 mL	00621019080389	Grey	No
038	0908_QC110_220519	HDPE (no PTFE)	20 mL	00350621036726	Grey	No
038	0908_QC110_220519	HDPE (no PTFE)	20 mL	00350621036578	Grey	No
039	0908_QC109_220519	HDPE (no PTFE)	20 mL	00350621036468	Grey	No
040	0908_QC111_220519	HDPE Soil Jar	200 mL	00621019080337	Grey	No
		HDPE (no PTFE)	20 mL	00352010048220	Grey	No

Friday, May 20, 2022

4:25:00 AM

**CHAIN OF CUSTODY**

ALS COC#: 37190 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_SW-SD\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comments:

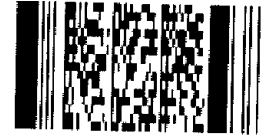
CONTACT PH:

SAMPLER MOBILE:


QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

040	0908_QC111_220519	HDPE (no PTFE)	20 mL	00350621057842	Grey	No
040	0908_QC111_220519	HDPE (no PTFE)	20 mL	00350621057786	Grey	No
041	0908_SD108_220519	HDPE Soil Jar	200 mL	00620719055216	Grey	No

**Total Bottle Count: ALS: 83, Non ALS: 0**



## Custody Document for Submissions via ALS Compass App

Project: 60612562 Client: Defence Project Manager:   
 ALS Compass COC Reference: 17x COC's below # Samples: \_\_\_\_\_ Sampler: \_\_\_\_\_  
 Turnaround Requirements: Standard Urgent \_\_\_\_\_ Phone: \_\_\_\_\_

Special Instructions:	ALS Use Only
- 37188      - 37693      - 37148      - 37615      - 37191	Custody seal intact? <input checked="" type="checkbox"/> YES      NO      N/A
- 37190      - 37789      - 37662      - 37602      - 37867	Free ice/ frozen ice bricks upon receipt? <input checked="" type="checkbox"/> YES      NO      N/A
- 37694      - 37788      - 37645      - 37601      - 37209	Random sample temperature on receipt?      2.5 °C
- 37628      - 37585	

Custody:		Relinquished by:		Received by:	
Relinquished by: <u>AM</u>	Received by: <u>JW</u>	Relinquished by: <u>TO'B</u>	Received by:	Date / Time: <u>20/5/22</u>	Date / Time: <u>14:30</u>
Date / Time: <u>20.5.22</u> <u>2:25</u>	Date / Time: <u>14:30</u>	Date / Time: <u>20/5/22</u> <u>5pm</u>	Date / Time:	LAB OF ORIGIN: <u>NEWCASTLE</u>	

**E-MAILED**

PP 20/5/22 7340



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217534  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 4  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 37190  
Site : WLM\_SW-SD\_1  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 30-Jun-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 2  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5'c - Ice present  
No. of samples received / analysed : 41 / 41

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2217534-001	18-May-2022 10:45	0908_SD001_220518	✓	✓
ES2217534-002	18-May-2022 09:35	0908_SD005_220518	✓	✓
ES2217534-003	18-May-2022 11:15	0908_SD006_220518	✓	✓
ES2217534-004	18-May-2022 11:00	0908_SD007_220518	✓	✓
ES2217534-005	17-May-2022 11:25	0908_SD009_220517	✓	✓
ES2217534-006	16-May-2022 14:45	0908_SD014_220516	✓	✓
ES2217534-007	17-May-2022 11:00	0908_SD023_220517	✓	✓
ES2217534-008	16-May-2022 15:20	0908_SD024_220516	✓	✓
ES2217534-009	19-May-2022 13:36	0908_SD047_220519	✓	✓
ES2217534-010	19-May-2022 12:54	0908_SD048_220519	✓	✓
ES2217534-011	19-May-2022 11:13	0908_SD055_220519	✓	✓
ES2217534-012	17-May-2022 09:55	0908_SD059_220517	✓	✓
ES2217534-013	18-May-2022 14:59	0908_SD060_220518	✓	✓
ES2217534-014	16-May-2022 13:15	0908_SD062_220516	✓	✓
ES2217534-015	16-May-2022 11:58	0908_SD079_220516	✓	✓
ES2217534-016	16-May-2022 12:55	0908_SD081_220516	✓	✓
ES2217534-017	19-May-2022 09:18	0908_SD110_220519	✓	✓
ES2217534-037	17-May-2022 11:25	0908_QC105_220517	✓	✓
ES2217534-039	19-May-2022 09:45	0908_QC109_220519	✓	✓
ES2217534-041	19-May-2022 09:45	0908_SD108_220519	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217534-018	18-May-2022 10:45	0908_SW001_220518	✓
ES2217534-019	18-May-2022 09:35	0908_SW005_220518	✓
ES2217534-020	18-May-2022 11:10	0908_SW006_220518	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217534-021	18-May-2022 10:55	0908_SW007_220518		✓
ES2217534-022	17-May-2022 11:25	0908_SW009_220517		✓
ES2217534-023	16-May-2022 14:45	0908_SW014_220516		✓
ES2217534-024	17-May-2022 10:50	0908_SW023_220517		✓
ES2217534-025	16-May-2022 15:20	0908_SW024_220516		✓
ES2217534-026	19-May-2022 13:28	0908_SW047_220519		✓
ES2217534-027	19-May-2022 12:53	0908_SW048_220519		✓
ES2217534-028	19-May-2022 11:00	0908_SW055_220519		✓
ES2217534-029	17-May-2022 09:45	0908_SW059_220517		✓
ES2217534-030	18-May-2022 14:50	0908_SW060_220518		✓
ES2217534-031	16-May-2022 13:15	0908_SW062_220516		✓
ES2217534-032	16-May-2022 12:05	0908_SW079_220516		✓
ES2217534-033	16-May-2022 13:00	0908_SW081_220516		✓
ES2217534-034	19-May-2022 09:45	0908_SW108_220519		✓
ES2217534-035	19-May-2022 09:10	0908_SW110_220519		✓
ES2217534-036	17-May-2022 09:45	0908_QC103_220517		✓
ES2217534-038	19-May-2022 09:45	0908_QC110_220519		✓
ES2217534-040	19-May-2022 11:00	0908_QC111_220519		✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

Email

Email

Email

Email

Email

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

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Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2217534</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37190 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_SW-SD_1 <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 41 <b>No. of samples analysed</b> : 41	<b>Page</b> : 1 of 21  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 14:30 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 30-Jun-2022 14:06
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/06/2022): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 15/06/2022, for samples 7, 13, & 15. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_SW007_220518	0908_QC111_220519	----	----	----
		Sampling date / time		18-May-2022 10:55	19-May-2022 11:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2217534-021	ES2217534-040	-----	-----	-----
				Result	Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.05	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.08	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.00	0.96	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.11	0.06	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	11.2	3.98	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	0.08	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.28	0.23	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	0.05	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.11	0.08	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_SW007_220518	0908_QC111_220519	----	----	----
		Sampling date / time		18-May-2022 10:55	19-May-2022 11:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2217534-021	ES2217534-040	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<b>0.08</b>	<b>0.07</b>	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>13.0</b>	<b>5.64</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>12.2</b>	<b>4.94</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>12.8</b>	<b>5.50</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>99.5</b>	<b>103</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>100</b>	<b>84.0</b>	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_220518	0908_SD005_220518	0908_SD006_220518	0908_SD007_220518	0908_SD009_220517
				Sampling date / time	18-May-2022 10:45	18-May-2022 09:35	18-May-2022 11:15	18-May-2022 11:00	17-May-2022 11:25
Compound	CAS Number	LOR	Unit	ES2217534-001	ES2217534-002	ES2217534-003	ES2217534-004	ES2217534-005	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	22.6	26.7	26.2	28.5	32.1	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	<0.0002	0.0010	0.0006	0.0004	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0014	0.0010	0.0296	0.0050	0.0077	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_220518	0908_SD005_220518	0908_SD006_220518	0908_SD007_220518	0908_SD009_220517
Sampling date / time					18-May-2022 10:45	18-May-2022 09:35	18-May-2022 11:15	18-May-2022 11:00	17-May-2022 11:25
Compound	CAS Number	LOR	Unit	ES2217534-001	ES2217534-002	ES2217534-003	ES2217534-004	ES2217534-005	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0016	0.0010	0.0308	0.0056	0.0085	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0016	0.0010	0.0306	0.0056	0.0081	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0016	0.0010	0.0308	0.0056	0.0081	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	103	104	87.5	98.0	96.5	
13C8-PFOA	----	0.0002	%	102	106	100	97.0	92.5	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD014_220516	0908_SD023_220517	0908_SD024_220516	0908_SD047_220519	0908_SD048_220519
Sampling date / time				16-May-2022 14:45	17-May-2022 11:00	16-May-2022 15:20	19-May-2022 13:36	19-May-2022 12:54	
Compound	CAS Number	LOR	Unit	ES2217534-006	ES2217534-007	ES2217534-008	ES2217534-009	ES2217534-010	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	41.6	46.5	73.9	31.7	22.8	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	<0.0002	0.0012	0.0002	0.0014	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0039	0.0008	0.0031	0.0016	0.0033	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD014_220516	0908_SD023_220517	0908_SD024_220516	0908_SD047_220519	0908_SD048_220519
Sampling date / time				16-May-2022 14:45	17-May-2022 11:00	16-May-2022 15:20	19-May-2022 13:36	19-May-2022 12:54	
Compound	CAS Number	LOR	Unit	ES2217534-006	ES2217534-007	ES2217534-008	ES2217534-009	ES2217534-010	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0044</b>	<b>0.0008</b>	<b>0.0043</b>	<b>0.0018</b>	<b>0.0058</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0041</b>	<b>0.0008</b>	<b>0.0043</b>	<b>0.0018</b>	<b>0.0047</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0041</b>	<b>0.0008</b>	<b>0.0043</b>	<b>0.0018</b>	<b>0.0058</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>96.5</b>	<b>94.0</b>	<b>94.0</b>	<b>86.0</b>	<b>97.5</b>	
13C8-PFOA	----	0.0002	%	<b>92.0</b>	<b>98.5</b>	<b>93.0</b>	<b>98.5</b>	<b>103</b>	





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD055_220519	0908_SD059_220517	0908_SD060_220518	0908_SD062_220516	0908_SD079_220516
Sampling date / time				19-May-2022 11:13	17-May-2022 09:55	18-May-2022 14:59	16-May-2022 13:15	16-May-2022 11:58	
Compound	CAS Number	LOR	Unit	ES2217534-011	ES2217534-012	ES2217534-013	ES2217534-014	ES2217534-015	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	27.1	33.1	38.8	21.6	51.0	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0015	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0020	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	<0.0002	0.0217	0.0004	0.0006	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0048	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0092	0.0026	0.226	0.0004	0.0038	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0033	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0014	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD055_220519	0908_SD059_220517	0908_SD060_220518	0908_SD062_220516	0908_SD079_220516
Sampling date / time				19-May-2022 11:13	17-May-2022 09:55	18-May-2022 14:59	16-May-2022 13:15	16-May-2022 11:58	
Compound	CAS Number	LOR	Unit	ES2217534-011	ES2217534-012	ES2217534-013	ES2217534-014	ES2217534-015	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0099</b>	<b>0.0026</b>	<b>0.262</b>	<b>0.0008</b>	<b>0.0044</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0099</b>	<b>0.0026</b>	<b>0.248</b>	<b>0.0008</b>	<b>0.0044</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0099</b>	<b>0.0026</b>	<b>0.255</b>	<b>0.0008</b>	<b>0.0044</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>108</b>	<b>103</b>	<b>104</b>	<b>92.0</b>	<b>84.5</b>	
13C8-PFOA	----	0.0002	%	<b>91.5</b>	<b>98.0</b>	<b>104</b>	<b>95.0</b>	<b>93.5</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD081_220516	0908_SD110_220519	0908_QC105_220517	0908_QC109_220519	0908_SD108_220519
Sampling date / time				16-May-2022 12:55	19-May-2022 09:18	17-May-2022 11:25	19-May-2022 09:45	19-May-2022 09:45	19-May-2022 09:45
Compound	CAS Number	LOR	Unit	ES2217534-016	ES2217534-017	ES2217534-037	ES2217534-039	ES2217534-041	ES2217534-041
				Result	Result	Result	Result	Result	Result
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	86.1	48.3	33.3	49.5	41.8	41.8
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0051	0.0054	0.0016	0.0043	0.0016	0.0016
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.0015	<0.0002	0.0004	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0178	0.200	0.0194	0.0879	0.0377	0.0377
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0006	0.0003	0.0028	0.0010	0.0010
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0008	<0.0002	0.0007	0.0003	0.0003
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.0280	0.0013	0.0066	0.0029	0.0029
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD081_220516	0908_SD110_220519	0908_QC105_220517	0908_QC109_220519	0908_SD108_220519
Sampling date / time				16-May-2022 12:55	19-May-2022 09:18	17-May-2022 11:25	19-May-2022 09:45	19-May-2022 09:45	
Compound	CAS Number	LOR	Unit	ES2217534-016	ES2217534-017	ES2217534-037	ES2217534-039	ES2217534-041	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<b>0.0015</b>	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0229</b>	<b>0.238</b>	<b>0.0226</b>	<b>0.103</b>	<b>0.0435</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0229</b>	<b>0.205</b>	<b>0.0210</b>	<b>0.0922</b>	<b>0.0393</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0229</b>	<b>0.208</b>	<b>0.0210</b>	<b>0.0929</b>	<b>0.0396</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>89.5</b>	<b>105</b>	<b>116</b>	<b>99.0</b>	<b>98.5</b>	
13C8-PFOA	----	0.0002	%	<b>90.0</b>	<b>87.5</b>	<b>90.5</b>	<b>100</b>	<b>87.5</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW001_220518	0908_SW005_220518	0908_SW006_220518	0908_SW009_220517	0908_SW014_220516
				18-May-2022 10:45	18-May-2022 09:35	18-May-2022 11:10	17-May-2022 11:25	16-May-2022 14:45
Compound	CAS Number	LOR	Unit	ES2217534-018	ES2217534-019	ES2217534-020	ES2217534-022	ES2217534-023
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	0.04	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	<0.02	0.06	0.06	0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.37	0.25	1.05	0.82	0.22
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.02	0.14	0.08	0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.65	1.68	18.8	7.95	1.00
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.05	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	<0.02	0.11	0.07	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.08	0.06	0.29	0.22	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.05	0.04	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.02	0.12	0.08	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW001_220518	0908_SW005_220518	0908_SW006_220518	0908_SW009_220517	0908_SW014_220516
Sampling date / time				18-May-2022 10:45	18-May-2022 09:35	18-May-2022 11:10	17-May-2022 11:25	16-May-2022 14:45
Compound	CAS Number	LOR	Unit	ES2217534-018	ES2217534-019	ES2217534-020	ES2217534-022	ES2217534-023
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.07	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	2.25	2.03	20.8	9.36	1.33
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.02	1.93	19.8	8.77	1.22
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.18	2.01	20.5	9.22	1.29
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	104	104	98.4	104	102
13C8-PFOA	----	0.02	%	104	99.9	100	102	78.8



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW023_220517	0908_SW024_220516	0908_SW047_220519	0908_SW048_220519	0908_SW055_220519
				17-May-2022 10:50	16-May-2022 15:20	19-May-2022 13:28	19-May-2022 12:53	19-May-2022 11:00
Compound	CAS Number	LOR	Unit	ES2217534-024	ES2217534-025	ES2217534-026	ES2217534-027	ES2217534-028
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	0.03	0.08	0.05
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.02	0.06	0.13	0.08
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.30	0.23	0.87	1.22	1.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.06	0.08	0.06
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.32	0.24	5.34	0.44	3.81
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.06	0.04	0.06
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	0.05	0.19	0.23	0.23
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.05	0.05	0.05
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.01	0.11	0.08	0.08
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW023_220517	0908_SW024_220516	0908_SW047_220519	0908_SW048_220519	0908_SW055_220519
Sampling date / time				17-May-2022 10:50	16-May-2022 15:20	19-May-2022 13:28	19-May-2022 12:53	19-May-2022 11:00
Compound	CAS Number	LOR	Unit	ES2217534-024	ES2217534-025	ES2217534-026	ES2217534-027	ES2217534-028
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.05	<0.05	0.07
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.75	0.55	6.82	2.35	5.50
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.62	0.47	6.21	1.66	4.82
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.72	0.53	6.70	2.14	5.36
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	97.9	105	98.7	105
13C8-PFOA	----	0.02	%	78.8	81.1	79.4	80.6	79.5





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW059_220517	0908_SW060_220518	0908_SW062_220516	0908_SW079_220516	0908_SW081_220516
				Sampling date / time	17-May-2022 09:45	18-May-2022 14:50	16-May-2022 13:15	16-May-2022 12:05	16-May-2022 13:00
Compound	CAS Number	LOR	Unit	ES2217534-029	ES2217534-030	ES2217534-031	ES2217534-032	ES2217534-033	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.35	<0.02	0.04	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	0.50	0.02	0.05	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.74	3.90	0.22	0.37	<0.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	0.35	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.76	7.21	0.12	0.40	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.18	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.15	1.04	0.05	0.06	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.15	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.31	<0.01	0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW059_220517	0908_SW060_220518	0908_SW062_220516	0908_SW079_220516	0908_SW081_220516
Sampling date / time				17-May-2022 09:45	18-May-2022 14:50	16-May-2022 13:15	16-May-2022 12:05	16-May-2022 13:00	
Compound	CAS Number	LOR	Unit	ES2217534-029	ES2217534-030	ES2217534-031	ES2217534-032	ES2217534-033	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	1.92	14.1	0.41	0.93	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.50	11.1	0.34	0.77	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.80	13.2	0.39	0.88	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	101	104	98.3	102	104	
13C8-PFOA	----	0.02	%	81.5	84.8	86.8	81.7	84.5	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW108_220519	0908_SW110_220519	0908_QC103_220517	0908_QC110_220519	----
				Sampling date / time	19-May-2022 09:45	19-May-2022 09:10	17-May-2022 09:45	19-May-2022 09:45	----
Compound	CAS Number	LOR	Unit	ES2217534-034	ES2217534-035	ES2217534-036	ES2217534-038	-----	
				Result	Result	Result	Result	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.05	0.03	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.06	0.07	0.06	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.89	0.86	0.73	0.79	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.07	0.06	0.05	0.06	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	7.71	5.33	0.80	6.98	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.07	0.08	0.03	0.07	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.22	0.22	0.15	0.20	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	0.05	0.02	0.04	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.09	0.08	0.04	0.08	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW108_220519	0908_SW110_220519	0908_QC103_220517	0908_QC110_220519	----
Sampling date / time				19-May-2022 09:45	19-May-2022 09:10	17-May-2022 09:45	19-May-2022 09:45	----	
Compound	CAS Number	LOR	Unit	ES2217534-034	ES2217534-035	ES2217534-036	ES2217534-038	-----	
				Result	Result	Result	Result	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.11	0.09	<0.05	0.10	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	9.30	6.86	1.94	8.41	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	8.60	6.19	1.53	7.77	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	9.17	6.74	1.82	8.29	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	104	100	103	101	----	
13C8-PFOA	----	0.02	%	86.5	84.1	85.2	87.9	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217534	Page	: 1 of 9
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM_SW-SD_1	Issue Date	: 30-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 41
Order number	: 60612562_2.1	No. of samples analysed	: 41

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	36	2.78	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	36	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	----	----	----	25-May-2022	30-May-2022	✔
<b>HDPE Soil Jar (EA055)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	----	----	----	25-May-2022	31-May-2022	✔
<b>HDPE Soil Jar (EA055)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	----	----	----	25-May-2022	01-Jun-2022	✔
<b>HDPE Soil Jar (EA055)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	----	----	----	25-May-2022	02-Jun-2022	✔



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	05-Jul-2022	✓





Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	26-May-2022	15-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	26-May-2022	12-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	26-May-2022	13-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	26-May-2022	14-Nov-2022	✔	26-May-2022	05-Jul-2022	✔
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	26-May-2022	15-Nov-2022	✔	26-May-2022	05-Jul-2022	✔



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_220516, 0908_SD062_220516, 0908_SD081_220516	0908_SD024_220516, 0908_SD079_220516,	16-May-2022	26-May-2022	12-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD009_220517, 0908_SD059_220517,	0908_SD023_220517, 0908_QC105_220517	17-May-2022	26-May-2022	13-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_220518, 0908_SD006_220518, 0908_SD060_220518	0908_SD005_220518, 0908_SD007_220518,	18-May-2022	26-May-2022	14-Nov-2022	✓	26-May-2022	05-Jul-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_220519, 0908_SD055_220519, 0908_QC109_220519,	0908_SD048_220519, 0908_SD110_220519, 0908_SD108_220519	19-May-2022	26-May-2022	15-Nov-2022	✓	26-May-2022	05-Jul-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW014_220516, 0908_SW062_220516, 0908_SW081_220516	0908_SW024_220516, 0908_SW079_220516,	16-May-2022	25-May-2022	12-Nov-2022	✓	25-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW009_220517, 0908_SW059_220517,	0908_SW023_220517, 0908_QC103_220517	17-May-2022	25-May-2022	13-Nov-2022	✓	25-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_220518, 0908_SW006_220518, 0908_SW060_220518	0908_SW005_220518, 0908_SW007_220518,	18-May-2022	25-May-2022	14-Nov-2022	✓	25-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW047_220519, 0908_SW055_220519, 0908_SW110_220519, 0908_QC111_220519	0908_SW048_220519, 0908_SW108_220519, 0908_QC110_220519,	19-May-2022	25-May-2022	15-Nov-2022	✓	25-May-2022	15-Nov-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW014_220516, 0908_SW062_220516, 0908_SW081_220516	0908_SW024_220516, 0908_SW079_220516,	<b>16-May-2022</b>	<b>25-May-2022</b>	12-Nov-2022	✓	<b>25-May-2022</b>	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW009_220517, 0908_SW059_220517,	0908_SW023_220517, 0908_QC103_220517	<b>17-May-2022</b>	<b>25-May-2022</b>	13-Nov-2022	✓	<b>25-May-2022</b>	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_220518, 0908_SW006_220518, 0908_SW060_220518	0908_SW005_220518, 0908_SW007_220518,	<b>18-May-2022</b>	<b>25-May-2022</b>	14-Nov-2022	✓	<b>25-May-2022</b>	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW047_220519, 0908_SW055_220519, 0908_SW110_220519, 0908_QC111_220519	0908_SW048_220519, 0908_SW108_220519, 0908_QC110_220519,	<b>19-May-2022</b>	<b>25-May-2022</b>	15-Nov-2022	✓	<b>25-May-2022</b>	15-Nov-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW014_220516, 0908_SW062_220516, 0908_SW081_220516	0908_SW024_220516, 0908_SW079_220516,	<b>16-May-2022</b>	<b>25-May-2022</b>	12-Nov-2022	✓	<b>25-May-2022</b>	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW009_220517, 0908_SW059_220517,	0908_SW023_220517, 0908_QC103_220517	<b>17-May-2022</b>	<b>25-May-2022</b>	13-Nov-2022	✓	<b>25-May-2022</b>	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_220518, 0908_SW006_220518, 0908_SW060_220518	0908_SW005_220518, 0908_SW007_220518,	<b>18-May-2022</b>	<b>25-May-2022</b>	14-Nov-2022	✓	<b>25-May-2022</b>	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW047_220519, 0908_SW055_220519, 0908_SW110_220519, 0908_QC111_220519	0908_SW048_220519, 0908_SW108_220519, 0908_QC110_220519,	<b>19-May-2022</b>	<b>25-May-2022</b>	15-Nov-2022	✓	<b>25-May-2022</b>	15-Nov-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW014_220516, 0908_SW062_220516, 0908_SW081_220516	0908_SW024_220516, 0908_SW079_220516,	<b>16-May-2022</b>	<b>25-May-2022</b>	12-Nov-2022	✓	<b>25-May-2022</b>	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW009_220517, 0908_SW059_220517,	0908_SW023_220517, 0908_QC103_220517	<b>17-May-2022</b>	<b>25-May-2022</b>	13-Nov-2022	✓	<b>25-May-2022</b>	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_220518, 0908_SW006_220518, 0908_SW060_220518	0908_SW005_220518, 0908_SW007_220518,	<b>18-May-2022</b>	<b>25-May-2022</b>	14-Nov-2022	✓	<b>25-May-2022</b>	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW047_220519, 0908_SW055_220519, 0908_SW110_220519, 0908_QC111_220519	0908_SW048_220519, 0908_SW108_220519, 0908_QC110_220519,	<b>19-May-2022</b>	<b>25-May-2022</b>	15-Nov-2022	✓	<b>25-May-2022</b>	15-Nov-2022	✓
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW014_220516, 0908_SW062_220516, 0908_SW081_220516	0908_SW024_220516, 0908_SW079_220516,	<b>16-May-2022</b>	<b>25-May-2022</b>	12-Nov-2022	✓	<b>25-May-2022</b>	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW009_220517, 0908_SW059_220517,	0908_SW023_220517, 0908_QC103_220517	<b>17-May-2022</b>	<b>25-May-2022</b>	13-Nov-2022	✓	<b>25-May-2022</b>	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW001_220518, 0908_SW006_220518, 0908_SW060_220518	0908_SW005_220518, 0908_SW007_220518,	<b>18-May-2022</b>	<b>25-May-2022</b>	14-Nov-2022	✓	<b>25-May-2022</b>	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW047_220519, 0908_SW055_220519, 0908_SW110_220519, 0908_QC111_220519	0908_SW048_220519, 0908_SW108_220519, 0908_QC110_220519,	<b>19-May-2022</b>	<b>25-May-2022</b>	15-Nov-2022	✓	<b>25-May-2022</b>	15-Nov-2022	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	36	2.78	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	36	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

**Work Order : ES2217534**
**Page : 1 of 10**
**Amendment : 1**
**Client : AECOM AUSTRALIA PTY LTD**
**Laboratory : Environmental Division Sydney**
**Contact : [REDACTED]**
**Contact : [REDACTED]**
**Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304**
**Address : 277-289 Woodpark Road Smithfield NSW Australia 2164**
**Telephone : ----**
**Telephone : +61 2 8784 8555**
**Project : NSW\_0908\_PFASOMP**
**Date Samples Received : 20-May-2022**
**Order number : 60612562\_2.1**
**Date Analysis Commenced : 23-May-2022**
**C-O-C number : 37190**
**Issue Date : 30-Jun-2022**
**Sampler : [REDACTED]**
**Site : WLM\_SW-SD\_1**
**Quote number : SY/139/19 v4 60612562\_2.1**
**No. of samples received : 41**
**No. of samples analysed : 41**


This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4359174)</b>									
ES2217534-003	0908_SD006_220518	EA055: Moisture Content	----	0.1	%	26.2	24.6	6.3	0% - 20%
ES2217534-014	0908_SD062_220516	EA055: Moisture Content	----	0.1	%	21.6	26.3	19.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4360929)</b>									
ES2217534-001	0908_SD001_220518	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0014	0.0014	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2217534-011	0908_SD055_220519	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0009	19.6	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0092	0.0105	13.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360929)</b>									
ES2217534-001	0908_SD001_220518	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4360929) - continued</b>									
ES2217534-001	0908_SD001_220518	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2217534-011	0908_SD055_220519	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4360929)</b>									
ES2217534-001	0908_SD001_220518	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2217534-011	0908_SD055_220519	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4360929)</b>									
ES2217534-001	0908_SD001_220518	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2217534-011	0908_SD055_220519	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4357951)</b>									
ES2217533-040	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4357951)</b>									
ES2217533-040	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4357951)</b>									
ES2217533-040	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4357951) - continued</b>									
ES2217533-040	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4357951)</b>									
ES2217533-040	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4357951)</b>									
ES2217533-040	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360929)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360929)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	87.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	127	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	103	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360929)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.0	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.5	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360929)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	119	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	99.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	122	65.0	137



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360929) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	116	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4357951)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	122	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	108	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	113	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4358487)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	120	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	112	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	112	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4357951)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	103	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	119	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	121	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	111	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4358487)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	120	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	117	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	122	71.0	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4358487) - continued</b>									
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	82.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.1	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4357951)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	124	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	104	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	112	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	120	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	126	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	119	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4358487)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	120	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.2	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	106	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	74.5	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	118	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4357951)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	127	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	119	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	128	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	125	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4358487)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	119	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	120	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	109	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	126	71.4	144	



## Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4360929)</b>						
ES2217534-001	0908_SD001_220518	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	116	72.0 128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	116	73.0 123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	119	67.0 130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	104	70.0 132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	109	68.0 136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	121	59.0 134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4360929)</b>						
ES2217534-001	0908_SD001_220518	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	95.9	71.0 135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	122	69.0 132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	122	70.0 132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0 131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	111	69.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	111	72.0 129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	117	69.0 133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	127	64.0 136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	127	69.0 135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	105	66.0 139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	113	69.0 133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4360929)</b>						
ES2217534-001	0908_SD001_220518	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	120	67.0 137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	108	71.6 129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	117	69.8 131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	107	68.7 130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1 134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	119	63.0 144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	120	61.0 139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360929)</b>						
ES2217534-001	0908_SD001_220518	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	115	62.0 145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	107	64.0 140



Page : 10 of 10  
 Work Order : ES2217534 Amendment 1  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4360929) - continued</b>							
ES2217534-001	0908_SD001_220518	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	121	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	112	69.2	143



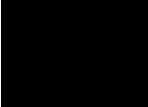
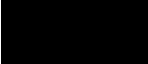
**CHAIN OF CUSTODY**  
 (ALS) COC#: 37188 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *P. Tran*  
 DATE TIME: *20/5/22 19:30*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER:   
 PRIMARY SAMPLER:   
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:  
 CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW108D_220519		19/05/2022 10:59 AM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_MW108S_220519		19/05/2022 11:18 AM	Water	ALS: 3 Non ALS: 0	No	X		
003	0908_MW109D_220519		19/05/2022 10:05 AM	Water	ALS: 3 Non ALS: 0	No	X		
004	0908_MW118_220517		17/05/2022 09:49 AM	Water	ALS: 3 Non ALS: 0	No	X		
005	0908_MW121_220518		18/05/2022 02:16 PM	Water	ALS: 3 Non ALS: 0	No	X		
006	0908_MW122_220518		18/05/2022 01:15 PM	Water	ALS: 3 Non ALS: 0	No	X		
007	0908_MW123_220518		18/05/2022 12:43 PM	Water	ALS: 4 Non ALS: 0	No	X		
008	0908_MW124_220516		16/05/2022 02:45 PM	Water	ALS: 3 Non ALS: 0	No	X		
009	0908_MW128D_220516		16/05/2022 11:45 AM	Water	ALS: 3 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2217533**



Telephone : + 61-2-8784 8555

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0908_MW128S_220516		16/05/2022 12:00 PM	Water	ALS: 3 Non ALS: 0	No	X		
011	0908_MW140_220516		16/05/2022 03:15 PM	Water	ALS: 3 Non ALS: 0	No	X		
012	0908_MW162D_220518		18/05/2022 01:56 PM	Water	ALS: 3 Non ALS: 0	No	X		
013	0908_MW162S_220518		18/05/2022 01:41 PM	Water	ALS: 3 Non ALS: 0	No	X		
014	0908_MW163_220519		19/05/2022 03:35 PM	Water	ALS: 3 Non ALS: 0	No	X		
015	0908_MW169D_220519		19/05/2022 12:39 PM	Water	ALS: 3 Non ALS: 0	No	X		
016	0908_MW169S_220519		19/05/2022 12:33 PM	Water	ALS: 3 Non ALS: 0	No	X		
017	0908_MW171D_220519		19/05/2022 11:48 AM	Water	ALS: 3 Non ALS: 0	No	X		
018	0908_MW171S_220519		19/05/2022 11:44 AM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_MW172_220519		19/05/2022 12:14 PM	Water	ALS: 3 Non ALS: 0	No	X		
020	0908_MW175D_220519		19/05/2022 10:20 AM	Water	ALS: 3 Non ALS: 0	No	X		
021	0908_MW179D_220519		19/05/2022 01:56 PM	Water	ALS: 3 Non ALS: 0	No	X		
022	0908_MW179S_220519		19/05/2022 01:48 PM	Water	ALS: 3 Non ALS: 0	No	X		
023	0908_MW195_220516		16/05/2022 11:00 AM	Water	ALS: 3 Non ALS: 0	No	X		
024	0908_MW202D_220519		19/05/2022 01:18 PM	Water	ALS: 3 Non ALS: 0	No	X		
025	0908_MW202S_220519		19/05/2022 01:08 PM	Water	ALS: 3 Non ALS: 0	No	X		
026	0908_MW232D_220518		18/05/2022 08:30 AM	Water	ALS: 3 Non ALS: 0	No	X		
027	0908_MW232S_220518		18/05/2022 08:30 AM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0908_MW247D_220518		18/05/2022 11:45 AM	Water	ALS: 3 Non ALS: 0	No	X		
029	0908_MW247S_220518		18/05/2022 11:40 AM	Water	ALS: 3 Non ALS: 0	No	X		
030	0908_MW255D_220518		18/05/2022 11:05 AM	Water	ALS: 3 Non ALS: 0	No	X		
031	0908_MW255S_220518		18/05/2022 11:16 AM	Water	ALS: 3 Non ALS: 0	No	X		
032	0908_MW256D_220517		17/05/2022 12:27 PM	Water	ALS: 3 Non ALS: 0	No	X		
033	0908_MW256S_220517		17/05/2022 12:44 PM	Water	ALS: 3 Non ALS: 0	No	X		
034	0908_MW257D_220517		17/05/2022 12:02 PM	Water	ALS: 3 Non ALS: 0	No	X		
035	0908_MW257S_220517		17/05/2022 11:42 AM	Water	ALS: 3 Non ALS: 0	No	X		
036	0908_MW258D_220517		17/05/2022 10:35 AM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_MW258S_220517		17/05/2022 10:55 AM	Water	ALS: 4 Non ALS: 0	No	X		
038	0908_MW260D_220518		18/05/2022 10:28 AM	Water	ALS: 3 Non ALS: 0	No	X		
039	0908_MW260S_220518		18/05/2022 10:17 AM	Water	ALS: 3 Non ALS: 0	No	X		
040	0908_MW263D_220518		18/05/2022 08:38 AM	Water	ALS: 4 Non ALS: 0	No	X		
041	0908_MW263S_220518		18/05/2022 08:59 AM	Water	ALS: 3 Non ALS: 0	No	X		
042	0908_MW279S_220519		19/05/2022 04:05 PM	Water	ALS: 3 Non ALS: 0	No	X		
043	0908_MW466_220519		19/05/2022 10:39 AM	Water	ALS: 3 Non ALS: 0	No	X		
044	0908_MW468_220519		19/05/2022 10:20 AM	Water	ALS: 3 Non ALS: 0	No	X		
045	0908_QC100_220517		17/05/2022 09:49 AM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0908_QC102_220517		17/05/2022 10:35 AM	Water	ALS: 3 Non ALS: 0	No	X		
047	0908_QC104_220518		18/05/2022 08:40 AM	Water	ALS: 3 Non ALS: 0	No	X		
048	0908_QC107_220518		18/05/2022 08:30 AM	Water	ALS: 3 Non ALS: 0	No	X		
049	0908_QC106_220518		18/05/2022 11:04 AM	Water	ALS: 3 Non ALS: 0	No	X		
050	0908_QC108_220518		18/05/2022 01:41 PM	Water	ALS: 3 Non ALS: 0	No	X		
051	0908_QC104/2_220518		18/05/2022 04:00 PM	Water	ALS: 3 Non ALS: 0	No	X		
052	0908_QC112_220519		19/05/2022 01:08 PM	Water	ALS: 3 Non ALS: 0	No	X		

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW108D_220519	HDPE (no PTFE)	20 mL	00350621036617	Grey	No	
001	0908_MW108D_220519	HDPE (no PTFE)	20 mL	003506210366584	Grey	No	
001	0908_MW108D_220519	HDPE (no PTFE)	20 mL	00350621036612	Grey	No	
002	0908_MW108S_220519	HDPE (no PTFE)	20 mL	00350621036448	Grey	No	
002	0908_MW108S_220519	HDPE (no PTFE)	20 mL	00350621036608	Grey	No	
002	0908_MW108S_220519	HDPE (no PTFE)	20 mL	00350621036940	Grey	No	
003	0908_MW109D_220519	HDPE (no PTFE)	20 mL	00350621036853	Grey	No	
003	0908_MW109D_220519	HDPE (no PTFE)	20 mL	00350621036434	Grey	No	
003	0908_MW109D_220519	HDPE (no PTFE)	20 mL	00350621036755	Grey	No	
004	0908_MW118_220517	HDPE (no PTFE)	20 mL	00350621022209	Grey	No	
004	0908_MW118_220517	HDPE (no PTFE)	20 mL	00350621022019	Grey	No	
004	0908_MW118_220517	HDPE (no PTFE)	20 mL	00350621021848	Grey	No	
005	0908_MW121_220518	HDPE (no PTFE)	20 mL	00350621036751	Grey	No	
005	0908_MW121_220518	HDPE (no PTFE)	20 mL	00350621036614	Grey	No	
005	0908_MW121_220518	HDPE (no PTFE)	20 mL	00350621036757	Grey	No	
006	0908_MW122_220518	HDPE (no PTFE)	20 mL	00350621022036	Grey	No	
006	0908_MW122_220518	HDPE (no PTFE)	20 mL	00350621021942	Grey	No	
006	0908_MW122_220518	HDPE (no PTFE)	20 mL	00350821049924	Grey	No	
007	0908_MW123_220518	HDPE (no PTFE)	20 mL	00350621036758	Grey	No	
007	0908_MW123_220518	HDPE (no PTFE)	20 mL	00350621036446	Grey	No	
007	0908_MW123_220518	HDPE (no PTFE)	20 mL	00350621036725	Grey	No	
007	0908_MW123_220518	HDPE (no PTFE)	20 mL	00350621036965	Grey	No	
008	0908_MW124_220516	HDPE (no PTFE)	20 mL	00350621021774	Grey	No	
008	0908_MW124_220516	HDPE (no PTFE)	20 mL	00350621021985	Grey	No	
008	0908_MW124_220516	HDPE (no PTFE)	20 mL	00352010021960	Grey	No	
009	0908_MW128D_220516	HDPE (no PTFE)	20 mL	00352010028471	Grey	No	

**CHAIN OF CUSTODY**

COC#: 37188

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_MW\_1

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

009	0908_MW128D_220516	HDPE (no PTFE)	20 mL	00350621057624	Grey	No	
009	0908_MW128D_220516	HDPE (no PTFE)	20 mL	00350621057894	Grey	No	
010	0908_MW128S_220516	HDPE (no PTFE)	20 mL	00350621021987	Grey	No	
010	0908_MW128S_220516	HDPE (no PTFE)	20 mL	00352010048076	Grey	No	
010	0908_MW128S_220516	HDPE (no PTFE)	20 mL	00350621021949	Grey	No	
011	0908_MW140_220516	HDPE (no PTFE)	20 mL	00350621021973	Grey	No	
011	0908_MW140_220516	HDPE (no PTFE)	20 mL	00350621022289	Grey	No	
011	0908_MW140_220516	HDPE (no PTFE)	20 mL	00350621021856	Grey	No	
012	0908_MW162D_220518	HDPE (no PTFE)	20 mL	00350621036715	Grey	No	
012	0908_MW162D_220518	HDPE (no PTFE)	20 mL	00350621036838	Grey	No	
012	0908_MW162D_220518	HDPE (no PTFE)	20 mL	00350621036444	Grey	No	
013	0908_MW162S_220518	HDPE (no PTFE)	20 mL	00350821049913	Grey	No	
013	0908_MW162S_220518	HDPE (no PTFE)	20 mL	00350821049891	Grey	No	
013	0908_MW162S_220518	HDPE (no PTFE)	20 mL	00350821049880	Grey	No	
014	0908_MW163_220519	HDPE (no PTFE)	20 mL	00350621036883	Grey	No	
014	0908_MW163_220519	HDPE (no PTFE)	20 mL	00350621037006	Grey	No	
014	0908_MW163_220519	HDPE (no PTFE)	20 mL	00350621036423	Grey	No	
015	0908_MW169D_220519	HDPE (no PTFE)	20 mL	00350621031654	Grey	No	
015	0908_MW169D_220519	HDPE (no PTFE)	20 mL	00350621021963	Grey	No	
015	0908_MW169D_220519	HDPE (no PTFE)	20 mL	00350621022340	Grey	No	
016	0908_MW169S_220519	HDPE (no PTFE)	20 mL	00352010048070	Grey	No	
016	0908_MW169S_220519	HDPE (no PTFE)	20 mL	00350621021962	Grey	No	
016	0908_MW169S_220519	HDPE (no PTFE)	20 mL	00352010028503	Grey	No	
017	0908_MW171D_220519	HDPE (no PTFE)	20 mL	00350621036544	Grey	No	
017	0908_MW171D_220519	HDPE (no PTFE)	20 mL	00350621037005	Grey	No	
017	0908_MW171D_220519	HDPE (no PTFE)	20 mL	00350621036703	Grey	No	
018	0908_MW171S_220519	HDPE (no PTFE)	20 mL	00350621036563	Grey	No	



RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

018	0908_MW171S_220519	HDPE (no PTFE)	20 mL	00350621036620	Grey	No	
018	0908_MW171S_220519	HDPE (no PTFE)	20 mL	00350621036576	Grey	No	
019	0908_MW172_220519	HDPE (no PTFE)	20 mL	00352010048181	Grey	No	
019	0908_MW172_220519	HDPE (no PTFE)	20 mL	00350621034151	Grey	No	
019	0908_MW172_220519	HDPE (no PTFE)	20 mL	00352010028680	Grey	No	
020	0908_MW175D_220519	HDPE (no PTFE)	20 mL	00350621036699	Grey	No	
020	0908_MW175D_220519	HDPE (no PTFE)	20 mL	00350621036460	Grey	No	
020	0908_MW175D_220519	HDPE (no PTFE)	20 mL	00350621036633	Grey	No	
021	0908_MW179D_220519	HDPE (no PTFE)	20 mL	00350621036621	Grey	No	
021	0908_MW179D_220519	HDPE (no PTFE)	20 mL	00350621036462	Grey	No	
021	0908_MW179D_220519	HDPE (no PTFE)	20 mL	00350621036432	Grey	No	
022	0908_MW179S_220519	HDPE (no PTFE)	20 mL	00350621036489	Grey	No	
022	0908_MW179S_220519	HDPE (no PTFE)	20 mL	00350621036575	Grey	No	
022	0908_MW179S_220519	HDPE (no PTFE)	20 mL	00350621036776	Grey	No	
023	0908_MW195_220516	HDPE (no PTFE)	20 mL	00350621021903	Grey	No	
023	0908_MW195_220516	HDPE (no PTFE)	20 mL	00352010028791	Grey	No	
023	0908_MW195_220516	HDPE (no PTFE)	20 mL	00352010048225	Grey	No	
024	0908_MW202D_220519	HDPE (no PTFE)	20 mL	00350621022181	Grey	No	
024	0908_MW202D_220519	HDPE (no PTFE)	20 mL	00350621022307	Grey	No	
024	0908_MW202D_220519	HDPE (no PTFE)	20 mL	00350621036380	Grey	No	
025	0908_MW202S_220519	HDPE (no PTFE)	20 mL	00350621036845	Grey	No	
025	0908_MW202S_220519	HDPE (no PTFE)	20 mL	00350621022329	Grey	No	
025	0908_MW202S_220519	HDPE (no PTFE)	20 mL	00350621036673	Grey	No	
026	0908_MW232D_220518	HDPE (no PTFE)	20 mL	00350621036832	Grey	No	
026	0908_MW232D_220518	HDPE (no PTFE)	20 mL	00350621036657	Grey	No	
026	0908_MW232D_220518	HDPE (no PTFE)	20 mL	00350621036696	Grey	No	
027	0908_MW232S_220518	HDPE (no PTFE)	20 mL	00350621036660	Grey	No	

**CHAIN OF CUSTODY**  
 (ALS) COC#: 37188 ALS Laboratory: ES Sydney

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

027	0908_MW232S_220518	HDPE (no PTFE)	20 mL	00350621037011	Grey	No
027	0908_MW232S_220518	HDPE (no PTFE)	20 mL	00350621036457	Grey	No
028	0908_MW247D_220518	HDPE (no PTFE)	20 mL	00350621036887	Grey	No
028	0908_MW247D_220518	HDPE (no PTFE)	20 mL	00350621037010	Grey	No
028	0908_MW247D_220518	HDPE (no PTFE)	20 mL	00350621036957	Grey	No
029	0908_MW247S_220518	HDPE (no PTFE)	20 mL	00350621036891	Grey	No
029	0908_MW247S_220518	HDPE (no PTFE)	20 mL	00350621036648	Grey	No
029	0908_MW247S_220518	HDPE (no PTFE)	20 mL	00350621036921	Grey	No
030	0908_MW255D_220518	HDPE (no PTFE)	20 mL	00350621036407	Grey	No
030	0908_MW255D_220518	HDPE (no PTFE)	20 mL	00352010048175	Grey	No
030	0908_MW255D_220518	HDPE (no PTFE)	20 mL	00350621036251	Grey	No
031	0908_MW255S_220518	HDPE (no PTFE)	20 mL	00350621036905	Grey	No
031	0908_MW255S_220518	HDPE (no PTFE)	20 mL	00350621036807	Grey	No
031	0908_MW255S_220518	HDPE (no PTFE)	20 mL	00350621036779	Grey	No
032	0908_MW256D_220517	HDPE (no PTFE)	20 mL	00350821050006	Grey	No
032	0908_MW256D_220517	HDPE (no PTFE)	20 mL	00350821050092	Grey	No
032	0908_MW256D_220517	HDPE (no PTFE)	20 mL	00350821050019	Grey	No
033	0908_MW256S_220517	HDPE (no PTFE)	20 mL	00350821049940	Grey	No
033	0908_MW256S_220517	HDPE (no PTFE)	20 mL	00350821049921	Grey	No
033	0908_MW256S_220517	HDPE (no PTFE)	20 mL	00350821050000	Grey	No
034	0908_MW257D_220517	HDPE (no PTFE)	20 mL	00350621021876	Grey	No
034	0908_MW257D_220517	HDPE (no PTFE)	20 mL	00350621022058	Grey	No
034	0908_MW257D_220517	HDPE (no PTFE)	20 mL	00350821050055	Grey	No
035	0908_MW257S_220517	HDPE (no PTFE)	20 mL	00352010021757	Grey	No
035	0908_MW257S_220517	HDPE (no PTFE)	20 mL	00352010048090	Grey	No
035	0908_MW257S_220517	HDPE (no PTFE)	20 mL	00352010022049	Grey	No
036	0908_MW258D_220517	HDPE (no PTFE)	20 mL	00350621022097	Grey	No



RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP  
 SITE: WLM\_MW\_1  
 ORDER NO: 60612562\_2.1  
 PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

044	0908_MW468_220519	HDPE (no PTFE)	20 mL	00352010026521	Grey	No	
045	0908_QC100_220517	HDPE (no PTFE)	20 mL	00350621021761	Grey	No	
045	0908_QC100_220517	HDPE (no PTFE)	20 mL	00352010048040	Grey	No	
045	0908_QC100_220517	HDPE (no PTFE)	20 mL	00350621022177	Grey	No	
046	0908_QC102_220517	HDPE (no PTFE)	20 mL	00350821049813	Grey	No	
046	0908_QC102_220517	HDPE (no PTFE)	20 mL	00350821050059	Grey	No	
046	0908_QC102_220517	HDPE (no PTFE)	20 mL	00350821050136	Grey	No	
047	0908_QC104_220518	HDPE (no PTFE)	20 mL	00350621036786	Grey	No	
047	0908_QC104_220518	HDPE (no PTFE)	20 mL	00350621036545	Grey	No	
047	0908_QC104_220518	HDPE (no PTFE)	20 mL	00350621036778	Grey	No	
048	0908_QC107_220518	HDPE (no PTFE)	20 mL	00350621036910	Grey	No	
048	0908_QC107_220518	HDPE (no PTFE)	20 mL	00350621037008	Grey	No	
048	0908_QC107_220518	HDPE (no PTFE)	20 mL	00350621036718	Grey	No	
049	0908_QC106_220518	HDPE (no PTFE)	20 mL	00350621036586	Grey	No	
049	0908_QC106_220518	HDPE (no PTFE)	20 mL	00350621036609	Grey	No	
049	0908_QC106_220518	HDPE (no PTFE)	20 mL	00350621036571	Grey	No	
050	0908_QC108_220518	HDPE (no PTFE)	20 mL	00350621036632	Grey	No	
050	0908_QC108_220518	HDPE (no PTFE)	20 mL	00350621021983	Grey	No	
050	0908_QC108_220518	HDPE (no PTFE)	20 mL	00350621036588	Grey	No	
051	0908_QC104/2_220518	HDPE (no PTFE)	20 mL	00350621036794	Grey	No	
051	0908_QC104/2_220518	HDPE (no PTFE)	20 mL	00350621036650	Grey	No	
051	0908_QC104/2_220518	HDPE (no PTFE)	20 mL	00350621036606	Grey	No	
052	0908_QC112_220519	HDPE (no PTFE)	20 mL	00350621036636	Grey	No	
052	0908_QC112_220519	HDPE (no PTFE)	20 mL	00350621057538	Grey	No	
052	0908_QC112_220519	HDPE (no PTFE)	20 mL	00350621022199	Grey	No	

**Total Bottle Count: ALS: 159, Non ALS: 0**



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2217533  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 37188  
Site : WLM\_MW\_1  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 4  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-May-2022 14:30  
Client Requested Due Date : 27-May-2022  
Issue Date : 30-Jun-2022  
Scheduled Reporting Date : 27-May-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 2  
Receipt Detail :  
Security Seal : Intact.  
Temperature : 2.5°C - Ice present  
No. of samples received / analysed : 52 / 51

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **25/05/2022: ES2217533-051 incorrectly labelled sample with bottles scanned twice, allocated to correct sample code ES2217548-005.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2217533-051 : 18-May-2022 16:00 : 0908\_QC104/2\_220518 - Sample not received

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217533-001	19-May-2022 10:59	0908_MW108D_220519	✓
ES2217533-002	19-May-2022 11:18	0908_MW108S_220519	✓
ES2217533-003	19-May-2022 10:05	0908_MW109D_220519	✓
ES2217533-004	17-May-2022 09:49	0908_MW118_220517	✓
ES2217533-005	18-May-2022 14:16	0908_MW121_220518	✓
ES2217533-006	18-May-2022 13:15	0908_MW122_220518	✓
ES2217533-007	18-May-2022 12:43	0908_MW123_220518	✓
ES2217533-008	16-May-2022 14:45	0908_MW124_220516	✓
ES2217533-009	16-May-2022 11:45	0908_MW128D_220516	✓
ES2217533-010	16-May-2022 12:00	0908_MW128S_220516	✓
ES2217533-011	16-May-2022 15:15	0908_MW140_220516	✓
ES2217533-012	18-May-2022 13:56	0908_MW162D_220518	✓
ES2217533-013	18-May-2022 13:41	0908_MW162S_220518	✓
ES2217533-014	19-May-2022 15:35	0908_MW163_220519	✓
ES2217533-015	19-May-2022 12:39	0908_MW169D_220519	✓
ES2217533-016	19-May-2022 12:33	0908_MW169S_220519	✓
ES2217533-017	19-May-2022 11:48	0908_MW171D_220519	✓
ES2217533-018	19-May-2022 11:44	0908_MW171S_220519	✓
ES2217533-019	19-May-2022 12:14	0908_MW172_220519	✓
ES2217533-020	19-May-2022 10:20	0908_MW175D_220519	✓
ES2217533-021	19-May-2022 13:56	0908_MW179D_220519	✓
ES2217533-022	19-May-2022 13:48	0908_MW179S_220519	✓
ES2217533-023	16-May-2022 11:00	0908_MW195_220516	✓
ES2217533-024	19-May-2022 13:18	0908_MW202D_220519	✓
ES2217533-025	19-May-2022 13:08	0908_MW202S_220519	✓
ES2217533-026	18-May-2022 08:49	0908_MW232D_220518	✓
ES2217533-027	18-May-2022 08:42	0908_MW232S_220518	✓
ES2217533-028	18-May-2022 11:45	0908_MW247D_220518	✓
ES2217533-029	18-May-2022 11:40	0908_MW247S_220518	✓
ES2217533-030	18-May-2022 11:05	0908_MW255D_220518	✓
ES2217533-031	18-May-2022 11:16	0908_MW255S_220518	✓
ES2217533-032	17-May-2022 12:27	0908_MW256D_220517	✓
ES2217533-033	17-May-2022 12:44	0908_MW256S_220517	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2217533-034	17-May-2022 12:02	0908_MW257D_220517		✓
ES2217533-035	17-May-2022 11:42	0908_MW257S_220517		✓
ES2217533-036	17-May-2022 10:35	0908_MW258D_220517		✓
ES2217533-037	17-May-2022 10:55	0908_MW258S_220517		✓
ES2217533-038	18-May-2022 10:28	0908_MW260D_220518		✓
ES2217533-039	18-May-2022 10:17	0908_MW260S_220518		✓
ES2217533-040	18-May-2022 08:38	0908_MW263D_220518		✓
ES2217533-041	18-May-2022 08:59	0908_MW263S_220518		✓
ES2217533-042	19-May-2022 16:05	0908_MW279S_220519		✓
ES2217533-043	19-May-2022 10:39	0908_MW466_220519		✓
ES2217533-044	19-May-2022 10:20	0908_MW468_220519		✓
ES2217533-045	17-May-2022 09:49	0908_QC100_220517		✓
ES2217533-046	17-May-2022 10:35	0908_QC102_220517		✓
ES2217533-047	18-May-2022 08:40	0908_QC104_220518		✓
ES2217533-048	18-May-2022 08:42	0908_QC107_220518		✓
ES2217533-049	18-May-2022 11:04	0908_QC106_220518		✓
ES2217533-050	18-May-2022 13:41	0908_QC108_220518		✓
ES2217533-052	19-May-2022 13:08	0908_QC112_220519		✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)
- Electronic SRN for ESdat (ESRN\_ESDAT)

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2217533</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 17 WARABROOK BLVD NEWCASTLE Newcastle 2304 <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 37188 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_MW_1 <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 52 <b>No. of samples analysed</b> : 51	<b>Page</b> : 1 of 25  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 20-May-2022 14:30 <b>Date Analysis Commenced</b> : 23-May-2022 <b>Issue Date</b> : 30-Jun-2022 14:01
--	--



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/06/2022): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 15/06/2022, for samples 26, 27, & 48. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108D_22051 9	0908_MW108S_22051 9	0908_MW109D_22051 9	0908_MW118_220517	0908_MW121_220518
Sampling date / time				19-May-2022 10:59	19-May-2022 11:18	19-May-2022 10:05	17-May-2022 09:49	18-May-2022 14:16
Compound	CAS Number	LOR	Unit	ES2217533-001 Result	ES2217533-002 Result	ES2217533-003 Result	ES2217533-004 Result	ES2217533-005 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.22	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	<0.02	0.34	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.21	0.62	6.48	<0.01	0.04
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.11	0.72	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.83	30.9	<0.01	0.16
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.07	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.26	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	<0.02	0.92	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.18	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.03	0.60	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108D_22051 9	0908_MW108S_22051 9	0908_MW109D_22051 9	0908_MW118_220517	0908_MW121_220518
Sampling date / time				19-May-2022 10:59	19-May-2022 11:18	19-May-2022 10:05	17-May-2022 09:49	18-May-2022 14:16
Compound	CAS Number	LOR	Unit	ES2217533-001 Result	ES2217533-002 Result	ES2217533-003 Result	ES2217533-004 Result	ES2217533-005 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.08	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.26	1.59	40.9	<0.01	0.20
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.21	1.45	37.4	<0.01	0.20
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.23	1.48	39.7	<0.01	0.20
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	98.3	94.3	96.5	103	93.6
13C8-PFOA	----	0.02	%	100	98.4	98.3	103	94.7



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW122_220518	0908_MW123_220518	0908_MW124_220516	0908_MW128D_22051 6	0908_MW128S_22051 6
Sampling date / time				18-May-2022 13:15	18-May-2022 12:43	16-May-2022 14:45	16-May-2022 11:45	16-May-2022 12:00
Compound	CAS Number	LOR	Unit	ES2217533-006	ES2217533-007	ES2217533-008	ES2217533-009	ES2217533-010
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.08	<0.01	<0.01	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.10	<0.01	0.01	0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW122_220518	0908_MW123_220518	0908_MW124_220516	0908_MW128D_22051 6	0908_MW128S_22051 6
Sampling date / time				18-May-2022 13:15	18-May-2022 12:43	16-May-2022 14:45	16-May-2022 11:45	16-May-2022 12:00
Compound	CAS Number	LOR	Unit	ES2217533-006	ES2217533-007	ES2217533-008	ES2217533-009	ES2217533-010
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.02	0.18	<0.01	0.01	0.02
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	0.18	<0.01	0.01	0.02
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.02	0.18	<0.01	0.01	0.02
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	89.8	97.7	93.5	101	97.7
13C8-PFOA	----	0.02	%	102	101	95.6	99.2	98.0



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW140_220516	0908_MW162D_22051 8	0908_MW162S_22051 8	0908_MW163_220519	0908_MW169D_22051 9
Sampling date / time				16-May-2022 15:15	18-May-2022 13:56	18-May-2022 13:41	19-May-2022 15:35	19-May-2022 12:39
Compound	CAS Number	LOR	Unit	ES2217533-011	ES2217533-012	ES2217533-013	ES2217533-014	ES2217533-015
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<b>0.02</b>
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.10</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.08</b>
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<b>0.04</b>
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW140_220516	0908_MW162D_220518	0908_MW162S_220518	0908_MW163_220519	0908_MW169D_220519
				16-May-2022 15:15	18-May-2022 13:56	18-May-2022 13:41	19-May-2022 15:35	19-May-2022 12:39
Compound	CAS Number	LOR	Unit	ES2217533-011	ES2217533-012	ES2217533-013	ES2217533-014	ES2217533-015
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.24</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.18</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.24</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.2</b>	<b>97.2</b>	<b>93.0</b>	<b>93.6</b>	<b>89.2</b>
13C8-PFOA	----	0.02	%	<b>95.0</b>	<b>98.3</b>	<b>98.5</b>	<b>100</b>	<b>96.2</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169S_22051 9	0908_MW171D_22051 9	0908_MW171S_22051 9	0908_MW172_220519	0908_MW175D_22051 9
Sampling date / time				19-May-2022 12:33	19-May-2022 11:48	19-May-2022 11:44	19-May-2022 12:14	19-May-2022 10:20
Compound	CAS Number	LOR	Unit	ES2217533-016 Result	ES2217533-017 Result	ES2217533-018 Result	ES2217533-019 Result	ES2217533-020 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.33	0.02	0.17	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.30	0.03	0.26	0.08
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.13	0.93	0.58	1.28	0.76
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.19	<0.02	0.04
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.12	0.01	0.87	0.05	3.45
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	0.08	<0.02	0.09	0.08
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.09	0.38	0.04	0.20	0.26
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.03	<0.02	0.02	0.03
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01	0.09	0.05	0.05
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169S_22051 9	0908_MW171D_22051 9	0908_MW171S_22051 9	0908_MW172_220519	0908_MW175D_22051 9
Sampling date / time				19-May-2022 12:33	19-May-2022 11:48	19-May-2022 11:44	19-May-2022 12:14	19-May-2022 10:20
Compound	CAS Number	LOR	Unit	ES2217533-016	ES2217533-017	ES2217533-018	ES2217533-019	ES2217533-020
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.37	2.07	1.82	2.22	4.81
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.25	0.94	1.45	1.33	4.21
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.37	1.77	1.60	1.96	4.69
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.1	100	102	90.4	99.1
13C8-PFOA	----	0.02	%	93.8	96.2	93.5	95.9	95.3



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_22051 9	0908_MW179S_22051 9	0908_MW195_220516	0908_MW202D_22051 9	0908_MW202S_22051 9
Sampling date / time				19-May-2022 13:56	19-May-2022 13:48	16-May-2022 11:00	19-May-2022 13:18	19-May-2022 13:08
Compound	CAS Number	LOR	Unit	ES2217533-021 Result	ES2217533-022 Result	ES2217533-023 Result	ES2217533-024 Result	ES2217533-025 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.05	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.09	<0.02	<0.02	0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	1.67	0.09	0.10	0.41
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.22	0.05	0.12	0.65
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.11	<0.02	<0.02	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.27	0.02	0.02	0.06
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.07	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.44	0.01	<0.01	0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_22051 9	0908_MW179S_22051 9	0908_MW195_220516	0908_MW202D_22051 9	0908_MW202S_22051 9
Sampling date / time				19-May-2022 13:56	19-May-2022 13:48	16-May-2022 11:00	19-May-2022 13:18	19-May-2022 13:08
Compound	CAS Number	LOR	Unit	ES2217533-021 Result	ES2217533-022 Result	ES2217533-023 Result	ES2217533-024 Result	ES2217533-025 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.01	3.04	0.17	0.24	1.17
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	1.89	0.14	0.22	1.06
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	2.93	0.17	0.24	1.15
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	106	92.5	105	93.5	109
13C8-PFOA	----	0.02	%	94.2	93.4	92.2	96.9	93.2



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW232D_22051 8	0908_MW232S_22051 8	0908_MW247D_22051 8	0908_MW247S_22051 8	0908_MW255D_22051 8
Sampling date / time				18-May-2022 08:49	18-May-2022 08:42	18-May-2022 11:45	18-May-2022 11:40	18-May-2022 11:05
Compound	CAS Number	LOR	Unit	ES2217533-026 Result	ES2217533-027 Result	ES2217533-028 Result	ES2217533-029 Result	ES2217533-030 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.05	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.02	0.70	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.06	0.33	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.13	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW232D_22051 8	0908_MW232S_22051 8	0908_MW247D_22051 8	0908_MW247S_22051 8	0908_MW255D_22051 8
Sampling date / time				18-May-2022 08:49	18-May-2022 08:42	18-May-2022 11:45	18-May-2022 11:40	18-May-2022 11:05
Compound	CAS Number	LOR	Unit	ES2217533-026 Result	ES2217533-027 Result	ES2217533-028 Result	ES2217533-029 Result	ES2217533-030 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.08	1.33	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.08	1.03	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.08	1.26	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	105	101	105	102	94.0
13C8-PFOA	----	0.02	%	91.7	95.0	92.0	95.9	94.7



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW255S_22051 8	0908_MW256D_22051 7	0908_MW256S_22051 7	0908_MW257D_22051 7	0908_MW257S_22051 7
Sampling date / time				18-May-2022 11:16	17-May-2022 12:27	17-May-2022 12:44	17-May-2022 12:02	17-May-2022 11:42
Compound	CAS Number	LOR	Unit	ES2217533-031 Result	ES2217533-032 Result	ES2217533-033 Result	ES2217533-034 Result	ES2217533-035 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW255S_22051 8	0908_MW256D_22051 7	0908_MW256S_22051 7	0908_MW257D_22051 7	0908_MW257S_22051 7
Sampling date / time				18-May-2022 11:16	17-May-2022 12:27	17-May-2022 12:44	17-May-2022 12:02	17-May-2022 11:42
Compound	CAS Number	LOR	Unit	ES2217533-031 Result	ES2217533-032 Result	ES2217533-033 Result	ES2217533-034 Result	ES2217533-035 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	99.6	100	108	106	103
13C8-PFOA	----	0.02	%	97.3	91.9	101	96.2	97.4





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_22051 7	0908_MW258S_22051 7	0908_MW260D_22051 8	0908_MW260S_22051 8	0908_MW263D_22051 8
Sampling date / time				17-May-2022 10:35	17-May-2022 10:55	18-May-2022 10:28	18-May-2022 10:17	18-May-2022 08:38
Compound	CAS Number	LOR	Unit	ES2217533-036 Result	ES2217533-037 Result	ES2217533-038 Result	ES2217533-039 Result	ES2217533-040 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.05	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_22051 7	0908_MW258S_22051 7	0908_MW260D_22051 8	0908_MW260S_22051 8	0908_MW263D_22051 8
Sampling date / time				17-May-2022 10:35	17-May-2022 10:55	18-May-2022 10:28	18-May-2022 10:17	18-May-2022 08:38
Compound	CAS Number	LOR	Unit	ES2217533-036 Result	ES2217533-037 Result	ES2217533-038 Result	ES2217533-039 Result	ES2217533-040 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	93.8	104	112	104	98.9
13C8-PFOA	----	0.02	%	96.5	96.6	98.5	90.8	101



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_22051 8	0908_MW279S_22051 9	0908_MW466_220519	0908_MW468_220519	0908_QC100_220517
Sampling date / time				18-May-2022 08:59	19-May-2022 16:05	19-May-2022 10:39	19-May-2022 10:20	17-May-2022 09:49
Compound	CAS Number	LOR	Unit	ES2217533-041 Result	ES2217533-042 Result	ES2217533-043 Result	ES2217533-044 Result	ES2217533-045 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.04	0.11	0.15	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.06	0.12	0.23	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.88	1.84	3.38	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.15	0.30	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.32	10.0	16.0	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.04	0.03	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.02	0.12	0.23	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.22	0.45	0.67	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.06	0.12	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	0.17	0.29	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_22051 8	0908_MW279S_22051 9	0908_MW466_220519	0908_MW468_220519	0908_QC100_220517
Sampling date / time				18-May-2022 08:59	19-May-2022 16:05	19-May-2022 10:39	19-May-2022 10:20	17-May-2022 09:49
Compound	CAS Number	LOR	Unit	ES2217533-041	ES2217533-042	ES2217533-043	ES2217533-044	ES2217533-045
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	0.12	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	1.55	13.1	21.7	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	1.20	11.8	19.4	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	1.49	12.8	21.1	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	103	97.5	103	104	98.2
13C8-PFOA	----	0.02	%	96.1	96.3	94.2	95.7	99.2





## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC102_220517	0908_QC104_220518	0908_QC107_220518	0908_QC106_220518	0908_QC108_220518
Sampling date / time				17-May-2022 10:35	18-May-2022 08:40	18-May-2022 08:42	18-May-2022 11:04	18-May-2022 13:41	
Compound	CAS Number	LOR	Unit	ES2217533-046	ES2217533-047	ES2217533-048	ES2217533-049	ES2217533-050	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	103	101	98.9	97.4	97.8	
13C8-PFOA	----	0.02	%	102	95.4	99.3	102	103	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_QC112_220519	----	----	----	----
		Sampling date / time		19-May-2022 13:08	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2217533-052	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<b>0.02</b>	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.41</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.71</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.07</b>	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.01</b>	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_QC112_220519	----	----	----	----
		Sampling date / time	19-May-2022 13:08	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2217533-052	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	1.22	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.12	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.20	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	108	----	----	----
13C8-PFOA	----	0.02	%	101	----	----	----





## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2217533	Page	: 1 of 9
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 20-May-2022
Site	: WLM_MW_1	Issue Date	: 30-Jun-2022
Sampler	: [REDACTED]	No. of samples received	: 52
Order number	: 60612562_2.1	No. of samples analysed	: 51

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	3	56	5.36	10.00	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	56	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW124_220516, 0908_MW128S_220516,	0908_MW128D_220516, 0908_MW140_220516	16-May-2022	24-May-2022	12-Nov-2022	✔	24-May-2022	12-Nov-2022	✔
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW195_220516		16-May-2022	25-May-2022	12-Nov-2022	✔	25-May-2022	12-Nov-2022	✔
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_220517		17-May-2022	24-May-2022	13-Nov-2022	✔	24-May-2022	13-Nov-2022	✔
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW256D_220517, 0908_MW257D_220517, 0908_MW258D_220517, 0908_QC100_220517,	0908_MW256S_220517, 0908_MW257S_220517, 0908_MW258S_220517, 0908_QC102_220517	17-May-2022	25-May-2022	13-Nov-2022	✔	25-May-2022	13-Nov-2022	✔
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW121_220518, 0908_MW123_220518, 0908_MW162S_220518	0908_MW122_220518, 0908_MW162D_220518,	18-May-2022	24-May-2022	14-Nov-2022	✔	24-May-2022	14-Nov-2022	✔
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW232D_220518, 0908_MW247D_220518, 0908_MW255D_220518, 0908_MW260D_220518, 0908_MW263D_220518, 0908_QC104_220518, 0908_QC106_220518,	0908_MW232S_220518, 0908_MW247S_220518, 0908_MW255S_220518, 0908_MW260S_220518, 0908_MW263S_220518, 0908_QC107_220518, 0908_QC108_220518	18-May-2022	25-May-2022	14-Nov-2022	✔	25-May-2022	14-Nov-2022	✔



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_220519, 0908_MW109D_220519, 0908_MW169D_220519, 0908_MW171D_220519, 0908_MW172_220519	0908_MW108S_220519, 0908_MW163_220519, 0908_MW169S_220519, 0908_MW171S_220519,	<b>19-May-2022</b>	<b>24-May-2022</b>	15-Nov-2022	✓	<b>24-May-2022</b>	15-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW175D_220519, 0908_MW179S_220519, 0908_MW202S_220519, 0908_MW466_220519, 0908_QC112_220519	0908_MW179D_220519, 0908_MW202D_220519, 0908_MW279S_220519, 0908_MW468_220519,	<b>19-May-2022</b>	<b>25-May-2022</b>	15-Nov-2022	✓	<b>25-May-2022</b>	15-Nov-2022	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW124_220516, 0908_MW128S_220516,	0908_MW128D_220516, 0908_MW140_220516	16-May-2022	24-May-2022	12-Nov-2022	✓	24-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW195_220516		16-May-2022	25-May-2022	12-Nov-2022	✓	25-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_220517		17-May-2022	24-May-2022	13-Nov-2022	✓	24-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW256D_220517, 0908_MW257D_220517, 0908_MW258D_220517, 0908_QC100_220517,	0908_MW256S_220517, 0908_MW257S_220517, 0908_MW258S_220517, 0908_QC102_220517	17-May-2022	25-May-2022	13-Nov-2022	✓	25-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW121_220518, 0908_MW123_220518, 0908_MW162S_220518	0908_MW122_220518, 0908_MW162D_220518,	18-May-2022	24-May-2022	14-Nov-2022	✓	24-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW232D_220518, 0908_MW247D_220518, 0908_MW255D_220518, 0908_MW260D_220518, 0908_MW263D_220518, 0908_QC104_220518, 0908_QC106_220518,	0908_MW232S_220518, 0908_MW247S_220518, 0908_MW255S_220518, 0908_MW260S_220518, 0908_MW263S_220518, 0908_QC107_220518, 0908_QC108_220518	18-May-2022	25-May-2022	14-Nov-2022	✓	25-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_220519, 0908_MW109D_220519, 0908_MW169D_220519, 0908_MW171D_220519, 0908_MW172_220519	0908_MW108S_220519, 0908_MW163_220519, 0908_MW169S_220519, 0908_MW171S_220519,	19-May-2022	24-May-2022	15-Nov-2022	✓	24-May-2022	15-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW175D_220519, 0908_MW179S_220519, 0908_MW202S_220519, 0908_MW466_220519, 0908_QC112_220519	0908_MW179D_220519, 0908_MW202D_220519, 0908_MW279S_220519, 0908_MW468_220519,	19-May-2022	25-May-2022	15-Nov-2022	✓	25-May-2022	15-Nov-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW124_220516, 0908_MW128S_220516,	0908_MW128D_220516, 0908_MW140_220516	16-May-2022	24-May-2022	12-Nov-2022	✓	24-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW195_220516		16-May-2022	25-May-2022	12-Nov-2022	✓	25-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_220517		17-May-2022	24-May-2022	13-Nov-2022	✓	24-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW256D_220517, 0908_MW257D_220517, 0908_MW258D_220517, 0908_QC100_220517,	0908_MW256S_220517, 0908_MW257S_220517, 0908_MW258S_220517, 0908_QC102_220517	17-May-2022	25-May-2022	13-Nov-2022	✓	25-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW121_220518, 0908_MW123_220518, 0908_MW162S_220518	0908_MW122_220518, 0908_MW162D_220518,	18-May-2022	24-May-2022	14-Nov-2022	✓	24-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW232D_220518, 0908_MW247D_220518, 0908_MW255D_220518, 0908_MW260D_220518, 0908_MW263D_220518, 0908_QC104_220518, 0908_QC106_220518,	0908_MW232S_220518, 0908_MW247S_220518, 0908_MW255S_220518, 0908_MW260S_220518, 0908_MW263S_220518, 0908_QC107_220518, 0908_QC108_220518	18-May-2022	25-May-2022	14-Nov-2022	✓	25-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_220519, 0908_MW109D_220519, 0908_MW169D_220519, 0908_MW171D_220519, 0908_MW172_220519	0908_MW108S_220519, 0908_MW163_220519, 0908_MW169S_220519, 0908_MW171S_220519,	19-May-2022	24-May-2022	15-Nov-2022	✓	24-May-2022	15-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW175D_220519, 0908_MW179S_220519, 0908_MW202S_220519, 0908_MW466_220519, 0908_QC112_220519	0908_MW179D_220519, 0908_MW202D_220519, 0908_MW279S_220519, 0908_MW468_220519,	19-May-2022	25-May-2022	15-Nov-2022	✓	25-May-2022	15-Nov-2022	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW124_220516, 0908_MW128S_220516,	0908_MW128D_220516, 0908_MW140_220516	16-May-2022	24-May-2022	12-Nov-2022	✓	24-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW195_220516		16-May-2022	25-May-2022	12-Nov-2022	✓	25-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_220517		17-May-2022	24-May-2022	13-Nov-2022	✓	24-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW256D_220517, 0908_MW257D_220517, 0908_MW258D_220517, 0908_QC100_220517,	0908_MW256S_220517, 0908_MW257S_220517, 0908_MW258S_220517, 0908_QC102_220517	17-May-2022	25-May-2022	13-Nov-2022	✓	25-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW121_220518, 0908_MW123_220518, 0908_MW162S_220518	0908_MW122_220518, 0908_MW162D_220518,	18-May-2022	24-May-2022	14-Nov-2022	✓	24-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW232D_220518, 0908_MW247D_220518, 0908_MW255D_220518, 0908_MW260D_220518, 0908_MW263D_220518, 0908_QC104_220518, 0908_QC106_220518,	0908_MW232S_220518, 0908_MW247S_220518, 0908_MW255S_220518, 0908_MW260S_220518, 0908_MW263S_220518, 0908_QC107_220518, 0908_QC108_220518	18-May-2022	25-May-2022	14-Nov-2022	✓	25-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_220519, 0908_MW109D_220519, 0908_MW169D_220519, 0908_MW171D_220519, 0908_MW172_220519	0908_MW108S_220519, 0908_MW163_220519, 0908_MW169S_220519, 0908_MW171S_220519,	19-May-2022	24-May-2022	15-Nov-2022	✓	24-May-2022	15-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW175D_220519, 0908_MW179S_220519, 0908_MW202S_220519, 0908_MW466_220519, 0908_QC112_220519	0908_MW179D_220519, 0908_MW202D_220519, 0908_MW279S_220519, 0908_MW468_220519,	19-May-2022	25-May-2022	15-Nov-2022	✓	25-May-2022	15-Nov-2022	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW124_220516, 0908_MW128S_220516,	0908_MW128D_220516, 0908_MW140_220516	16-May-2022	24-May-2022	12-Nov-2022	✓	24-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW195_220516		16-May-2022	25-May-2022	12-Nov-2022	✓	25-May-2022	12-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_220517		17-May-2022	24-May-2022	13-Nov-2022	✓	24-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW256D_220517, 0908_MW257D_220517, 0908_MW258D_220517, 0908_QC100_220517,	0908_MW256S_220517, 0908_MW257S_220517, 0908_MW258S_220517, 0908_QC102_220517	17-May-2022	25-May-2022	13-Nov-2022	✓	25-May-2022	13-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW121_220518, 0908_MW123_220518, 0908_MW162S_220518	0908_MW122_220518, 0908_MW162D_220518,	18-May-2022	24-May-2022	14-Nov-2022	✓	24-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW232D_220518, 0908_MW247D_220518, 0908_MW255D_220518, 0908_MW260D_220518, 0908_MW263D_220518, 0908_QC104_220518, 0908_QC106_220518,	0908_MW232S_220518, 0908_MW247S_220518, 0908_MW255S_220518, 0908_MW260S_220518, 0908_MW263S_220518, 0908_QC107_220518, 0908_QC108_220518	18-May-2022	25-May-2022	14-Nov-2022	✓	25-May-2022	14-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_220519, 0908_MW109D_220519, 0908_MW169D_220519, 0908_MW171D_220519, 0908_MW172_220519	0908_MW108S_220519, 0908_MW163_220519, 0908_MW169S_220519, 0908_MW171S_220519,	19-May-2022	24-May-2022	15-Nov-2022	✓	24-May-2022	15-Nov-2022	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW175D_220519, 0908_MW179S_220519, 0908_MW202S_220519, 0908_MW466_220519, 0908_QC112_220519	0908_MW179D_220519, 0908_MW202D_220519, 0908_MW279S_220519, 0908_MW468_220519,	19-May-2022	25-May-2022	15-Nov-2022	✓	25-May-2022	15-Nov-2022	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	5.36	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	5.36	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	56	5.36	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	56	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2217533</b>	Page	: 1 of 9
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 20-May-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 23-May-2022
<b>C-O-C number</b>	: 37188	<b>Issue Date</b>	: 30-Jun-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_MW_1		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 52		
<b>No. of samples analysed</b>	: 51		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4355994)</b>									
ES2217533-007	0908_MW123_220518	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.10	29.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	0.12	25.3	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4357946)</b>									
ES2217533-037	0908_MW258S_220517	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4357951)</b>									
ES2217533-040	0908_MW263D_220518	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4355994)</b>									
ES2217533-007	0908_MW123_220518	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4355994) - continued</b>											
ES2217533-007	0908_MW123_220518	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4357946)</b>											
ES2217533-037	0908_MW258S_220517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4357951)</b>									
		ES2217533-040	0908_MW263D_220518	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit		
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4355994)</b>											
ES2217533-007	0908_MW123_220518			EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit		



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4355994) - continued</b>									
ES2217533-007	0908_MW123_220518	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4357946)</b>									
ES2217533-037	0908_MW258S_220517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4357951)</b>									
ES2217533-040	0908_MW263D_220518	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4355994)</b>									
ES2217533-007	0908_MW123_220518	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4355994) - continued</b>									
ES2217533-007	0908_MW123_220518	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4357946)</b>									
ES2217533-037	0908_MW258S_220517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4357951)</b>									
ES2217533-040	0908_MW263D_220518	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4355994)</b>									
ES2217533-007	0908_MW123_220518	EP231X: Sum of PFAS	----	0.01	µg/L	0.18	0.22	20.0	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 4357946)</b>									
ES2217533-037	0908_MW258S_220517	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4357951)</b>									
ES2217533-040	0908_MW263D_220518	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4355994)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	110	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	111	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	99.6	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4357946)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.8	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	109	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	93.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	95.0	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4357951)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	122	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	108	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	113	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4355994)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.0	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	110	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	121	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	121	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	119	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4357946)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.6	73.0	129	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4357946) - continued</b>									
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	126	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	111	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4357951)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	103	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	119	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	121	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	122	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	128	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	111	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4355994)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	112	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	116	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	115	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4357946)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	124	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	97.4	62.6	147	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4357946) - continued</b>									
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	116	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	97.8	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	125	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4357951)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	124	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	104	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	112	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	120	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	126	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	119	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4355994)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	115	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	125	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	120	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	114	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4357946)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	123	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	105	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	110	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4357951)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	127	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	119	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	128	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	125	71.4	144	

**Matrix Spike (MS) Report**



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The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**





## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]

### Sample Login Details

<b>Your reference</b>	60612562_2.1, NSW_0908_PFASOMP
<b>Envirolab Reference</b>	297361
<b>Date Sample Received</b>	07/06/2022
<b>Date Instructions Received</b>	07/06/2022
<b>Date Results Expected to be Reported</b>	13/06/2022

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	18 Water, 3 Soil
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	4
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

<b>Phone: 02 9910 6200</b>	<b>Phone: 02 9910 6200</b>
<b>Fax: 02 9910 6201</b>	<b>Fax: 02 9910 6201</b>
<b>Email: [REDACTED]</b>	<b>Email: [REDACTED]</b>

Analysis Underway, details on the following page:



Sample ID	PFAS in Soils Extended	PFAS in Waters Extended
0908_QC200_220517		✓
0908_QC201_220516		✓
0908_QC202_220517		✓
0908_QC203_220517		✓
0908_QC204_220518		✓
0908_QC205_220517	✓	
0908_QC206_220518		✓
0908_QC207_220518		✓
0908_QC208_220518		✓
0908_QC209_220519	✓	
0908_QC210_220519		✓
0908_QC211_220527	✓	
0908_QC212_220519		✓
0908_QC213_220524		✓
0908_QC214_220524		✓
0908_QC215_220526		✓
0908_QC217_220530		✓
0908_QC218_220530		✓
0908_QC219_220530		✓
0908_QC220_220601		✓
0908_QC221_220602		✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

## CERTIFICATE OF ANALYSIS 297361

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████████
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<u>60612562_2.1, NSW_0908_PFASOMP</u>
<b>Number of Samples</b>	18 Water, 3 Soil
<b>Date samples received</b>	07/06/2022
<b>Date completed instructions received</b>	07/06/2022

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

<b>Date results requested by</b>	14/06/2022
<b>Date of Issue</b>	14/06/2022
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### Results Approved By

██████████ Senior Chemist  
 ██████████ Senior Chemist  
 ██████████ Organics and LC Supervisor

#### Authorised By

██  
 ██████████ Laboratory Manager



PFAS in Soils Extended				
Our Reference		297361-6	297361-10	297361-12
Your Reference	UNITS	0908_QC205_22 0517	0908_QC209_22 0519	0908_QC211_22 0527
Date Sampled		17/05/2022	19/05/2022	27/05/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	10/06/2022	10/06/2022	10/06/2022
Date analysed	-	10/06/2022	10/06/2022	10/06/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	1.3	0.6	<0.1
Perfluoroheptanesulfonic acid	µg/kg	0.3	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	35	10	0.8
Perfluorodecanesulfonic acid	µg/kg	1	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	0.2	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	2	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.4	<0.2	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	105	106	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	102	98	96
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	93	89	88
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	100	102	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	91	92	87

PFAS in Soils Extended				
Our Reference		297361-6	297361-10	297361-12
Your Reference	UNITS	0908_QC205_22 0517	0908_QC209_22 0519	0908_QC211_22 0527
Date Sampled		17/05/2022	19/05/2022	27/05/2022
Type of sample		Soil	Soil	Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	99	92	91
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	96	95	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	95	104	94
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	96	109	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	94	101	100
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	89	107	106
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	56	104	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	53	89	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	80	109	114
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	79	93	93
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	104	106	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	111	113	121
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	84	118	141
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	60	96	96
Extracted ISTD d <sub>3</sub> N MeFOSA	%	55	95	97
Extracted ISTD d <sub>5</sub> N EtFOSA	%	80	95	92
Extracted ISTD d <sub>7</sub> N MeFOSE	%	62	89	85
Extracted ISTD d <sub>9</sub> N EtFOSE	%	77	93	87
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	87	95	103
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	46	100	111
Total Positive PFHxS & PFOS	µg/kg	36	11	0.8
Total Positive PFOS & PFOA	µg/kg	35	10	0.8
Total Positive PFAS	µg/kg	39	11	0.8

Moisture				
Our Reference		297361-6	297361-10	297361-12
Your Reference	UNITS	0908_QC205_22 0517	0908_QC209_22 0519	0908_QC211_22 0527
Date Sampled		17/05/2022	19/05/2022	27/05/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	9/06/2022	9/06/2022	9/06/2022
Date analysed	-	10/06/2022	10/06/2022	10/06/2022
Moisture	%	27	19	27

PFAS in Waters Extended						
Our Reference		297361-1	297361-2	297361-3	297361-4	297361-5
Your Reference	UNITS	0908_QC200_22 0517	0908_QC201_22 0516	0908_QC202_22 0517	0908_QC203_22 0517	0908_QC204_22 0518
Date Sampled		17/05/2022	16/05/2022	17/05/2022	17/05/2022	18/05/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Date analysed	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Perfluorobutanesulfonic acid	µg/L	<0.01	0.03	<0.01	0.05	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	0.02	<0.01	0.06	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	0.22	<0.01	0.75	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	0.02	<0.01	0.06	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.96	<0.01	0.72	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.05	<0.01	0.13	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.02	<0.01	0.05	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid ethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid ethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	99	98	98	99	106
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	101	102	110	109	106
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	101	98	101	99	104
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	100	104	104	102	105
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	101	101	104	103	100

PFAS in Waters Extended						
Our Reference		297361-1	297361-2	297361-3	297361-4	297361-5
Your Reference	UNITS	0908_QC200_22 0517	0908_QC201_22 0516	0908_QC202_22 0517	0908_QC203_22 0517	0908_QC204_22 0518
Date Sampled		17/05/2022	16/05/2022	17/05/2022	17/05/2022	18/05/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	87	89	96	87	71
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	101	99	103	102	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	102	101	102	104	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	104	98	104	101	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	102	97	98	98	105
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	96	102	106	101	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	98	102	101	97	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	119	113	123	114	116
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	109	119	109	109	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	90	90	98	88	95
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	107	113	111	111	121
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	105	110	113	107	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	121	113	121	109	118
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	104	106	109	107	109
Extracted ISTD d <sub>3</sub> N MeFOSA	%	108	110	112	108	110
Extracted ISTD d <sub>5</sub> N EtFOSA	%	110	110	112	106	108
Extracted ISTD d <sub>7</sub> N MeFOSE	%	101	99	107	105	107
Extracted ISTD d <sub>9</sub> N EtFOSE	%	113	106	109	108	110
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	101	110	101	106	104
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	107	106	111	101	106
Total Positive PFHxS & PFOS	µg/L	<0.01	1.2	<0.01	1.5	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.98	<0.01	0.77	<0.01
Total Positive PFAS	µg/L	<0.01	1.3	<0.01	1.9	<0.01

PFAS in Waters Extended						
Our Reference		297361-7	297361-8	297361-9	297361-11	297361-13
Your Reference	UNITS	0908_QC206_22 0518	0908_QC207_22 0518	0908_QC208_22 0518	0908_QC210_22 0519	0908_QC212_22 0519
Date Sampled		18/05/2022	18/05/2022	18/05/2022	19/05/2022	19/05/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Date analysed	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.16	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.20	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	3.6	0.05
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.29	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	17	0.11
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	0.1	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	0.24	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	0.56	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	0.12	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.35	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	0.12	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	100	99	100	99	99
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	99	101	106	106	109
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	102	102	103	102	99
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	112	109	107	107	106
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	105	105	105	94	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	80	59	97	60	100

PFAS in Waters Extended						
Our Reference		297361-7	297361-8	297361-9	297361-11	297361-13
Your Reference	UNITS	0908_QC206_22 0518	0908_QC207_22 0518	0908_QC208_22 0518	0908_QC210_22 0519	0908_QC212_22 0519
Date Sampled		18/05/2022	18/05/2022	18/05/2022	19/05/2022	19/05/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	104	74	99	98	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	109	90	103	106	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	105	89	103	99	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	106	91	98	97	98
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	103	86	103	84	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	102	90	97	100	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	111	94	117	111	109
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	106	104	113	108	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	91	85	95	83	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	114	47	99	134	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	102	50	99	119	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	117	58	106	110	111
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	112	104	105	101	101
Extracted ISTD d <sub>3</sub> N MeFOSA	%	109	111	111	109	111
Extracted ISTD d <sub>5</sub> N EtFOSA	%	112	111	111	108	106
Extracted ISTD d <sub>7</sub> N MeFOSE	%	109	108	106	103	103
Extracted ISTD d <sub>9</sub> N EtFOSE	%	108	109	107	112	106
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	105	70	102	94	99
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	111	80	102	100	103
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	21	0.16
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	18	0.11
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	23	0.16

PFAS in Waters Extended						
Our Reference		297361-14	297361-15	297361-16	297361-17	297361-18
Your Reference	UNITS	0908_QC213_22 0524	0908_QC214_22 0524	0908_QC215_22 0526	0908_QC217_22 0530	0908_QC218_22 0530
Date Sampled		24/05/2022	24/05/2022	26/05/2022	30/05/2022	30/05/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Date analysed	-	07/06/2022	07/06/2022	07/06/2022	07/06/2022	07/06/2022
Perfluorobutanesulfonic acid	µg/L	<0.01	0.01	0.02	<0.01	0.02
Perfluoropentanesulfonic acid	µg/L	<0.01	0.01	0.03	<0.01	0.02
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.03	0.03	0.32	0.04	0.61
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	0.01	<0.01	0.10
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.03	<0.01	0.38
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.02	0.03	<0.01	0.07
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.01	<0.01	0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.05	<0.01	0.06
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	98	102	104	101	102
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	105	103	104	100	106
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	100	99	102	104	99
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	105	104	104	105	105
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	102	100	99	103	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	81	102	101	98	99



PFAS in Waters Extended						
Our Reference		297361-14	297361-15	297361-16	297361-17	297361-18
Your Reference	UNITS	0908_QC213_22 0524	0908_QC214_22 0524	0908_QC215_22 0526	0908_QC217_22 0530	0908_QC218_22 0530
Date Sampled		24/05/2022	24/05/2022	26/05/2022	30/05/2022	30/05/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	101	104	102	101	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	105	104	106	104	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	108	104	105	109	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	103	102	99	105	102
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	105	102	107	98	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	103	99	93	99	96
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	115	113	103	110	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	109	111	105	107	115
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	91	89	84	82	87
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	120	106	110	105	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	114	111	119	112	113
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	118	114	113	114	112
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	105	103	105	103	104
Extracted ISTD d <sub>3</sub> N MeFOSA	%	113	111	109	109	115
Extracted ISTD d <sub>5</sub> N EtFOSA	%	112	115	109	112	111
Extracted ISTD d <sub>7</sub> N MeFOSE	%	105	107	103	108	106
Extracted ISTD d <sub>9</sub> N EtFOSE	%	108	108	103	112	107
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	104	98	98	104	98
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	107	102	102	103	106
Total Positive PFHxS & PFOS	µg/L	0.03	0.03	0.35	0.04	0.99
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	0.08	<0.01	0.44
Total Positive PFAS	µg/L	0.03	0.07	0.50	0.04	1.3

PFAS in Waters Extended				
Our Reference		297361-19	297361-20	297361-21
Your Reference	UNITS	0908_QC219_22 0530	0908_QC220_22 0601	0908_QC221_22 0602
Date Sampled		30/05/2022	01/06/2022	02/06/2022
Type of sample		Water	Water	Water
Date prepared	-	07/06/2022	07/06/2022	07/06/2022
Date analysed	-	07/06/2022	07/06/2022	07/06/2022
Perfluorobutanesulfonic acid	µg/L	0.18	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	0.14	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.55	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	0.02	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.04	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.03	<0.02	<0.02
Perfluoropentanoic acid	µg/L	0.05	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.26	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	0.02	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.02	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103	102	102
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	107	97	106
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	99	102	102
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	104	104	106
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	99	100	99
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	97	93	101

PFAS in Waters Extended				
Our Reference		297361-19	297361-20	297361-21
Your Reference	UNITS	0908_QC219_22 0530	0908_QC220_22 0601	0908_QC221_22 0602
Date Sampled		30/05/2022	01/06/2022	02/06/2022
Type of sample		Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	104	104	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	103	113	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	108	110	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	100	103	100
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	103	97	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	100	94	95
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	106	109	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	108	104	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	88	74	87
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	105	106	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	105	106	116
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	104	104	104
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	107	99	103
Extracted ISTD d <sub>3</sub> N MeFOSA	%	106	113	117
Extracted ISTD d <sub>5</sub> N EtFOSA	%	111	106	115
Extracted ISTD d <sub>7</sub> N MeFOSE	%	106	106	101
Extracted ISTD d <sub>9</sub> N EtFOSE	%	107	103	108
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	100	96	95
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	99	96	94
Total Positive PFHxS & PFOS	µg/L	0.59	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.06	<0.01	<0.01
Total Positive PFAS	µg/L	1.3	<0.01	<0.01

Method ID	Methodology Summary
<b>Inorg-008</b>	<p>Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.</p>
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	297361-10
Date prepared	-			10/06/2022	6	10/06/2022	10/06/2022		10/06/2022	10/06/2022
Date analysed	-			10/06/2022	6	10/06/2022	10/06/2022		10/06/2022	10/06/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	100	100
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	95	111
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	6	1.3	1.1	17	97	93
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	6	0.3	0.2	40	100	99
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	6	35	28	22	103	##
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	6	1	1	0	79	113
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	6	<0.2	<0.2	0	101	102
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	6	<0.2	<0.2	0	102	100
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	100	101
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	103	96
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	6	0.1	<0.1	0	101	102
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	106	106
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	6	<0.5	<0.5	0	98	102
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	6	<0.5	<0.5	0	104	97
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	6	<0.5	<0.5	0	99	100
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	6	<0.5	<0.5	0	101	109
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	6	<5	<5	0	102	100
4:2 FTS	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	104	102
6:2 FTS	µg/kg	0.1	Org-029	<0.1	6	<0.1	<0.1	0	103	102
8:2 FTS	µg/kg	0.2	Org-029	<0.2	6	<0.2	<0.2	0	94	96
10:2 FTS	µg/kg	0.2	Org-029	<0.2	6	<0.2	<0.2	0	118	128
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	6	2	2	0	98	95
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	6	<1	<1	0	97	104
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	6	<1	<1	0	102	102
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	6	<1	<1	0	105	103
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	6	<5	<5	0	98	105
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	6	<0.2	<0.2	0	107	101
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	6	<0.4	<0.4	0	97	97
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	102	6	105	105	0	100	102
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	98	6	102	104	2	97	98

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	297361-10
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	87	6	93	92	1	95	92
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	95	6	100	97	3	105	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	91	6	91	90	1	100	95
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	99	6	99	102	3	110	93
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	96	6	96	94	2	103	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	95	6	95	100	5	105	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	101	6	96	103	7	106	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	100	6	94	94	0	107	99
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	112	6	89	87	2	120	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	109	6	56	54	4	123	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	119	6	53	49	8	126	87
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	130	6	80	73	9	132	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	95	6	79	80	1	105	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	96	6	104	107	3	100	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	105	6	111	116	4	118	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	#	6	84	77	9	#	106
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	105	6	60	54	11	111	97
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	96	6	55	54	2	110	96
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	103	6	80	76	5	111	98
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	88	6	62	52	18	100	95

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	297361-10
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	96	6	77	79	3	104	89
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	125	6	87	82	6	139	94
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	163	6	46	38	19	174	98

QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	297361-2
Date prepared	-			07/06/2022	1	07/06/2022	07/06/2022		07/06/2022	07/06/2022
Date analysed	-			07/06/2022	1	07/06/2022	07/06/2022		07/06/2022	07/06/2022
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	106
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	87
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	108	106
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	113	112
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	110
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	104
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	112	113
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	111	112
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	99
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	109	115
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	97
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	107
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	100
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	111	111
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	108	106
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	92	96
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	107	110
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	108
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	117	117
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	113	105
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	117
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	101
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	104	107
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	105	103
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	110	110
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	112	118
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	111
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	104
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	104	1	99	98	1	98	92
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	100	1	101	108	7	100	97



QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	297361-2
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	96	1	101	100	1	97	98
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	100	1	100	99	1	98	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	95	1	101	99	2	100	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	103	1	87	86	1	101	90
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	99	1	101	101	0	96	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	96	1	102	100	2	97	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	106	1	104	104	0	98	96
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	100	1	102	99	3	99	105
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	99	1	96	98	2	97	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	101	1	98	98	0	102	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	118	1	119	108	10	109	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	105	1	109	105	4	107	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	90	1	90	80	12	94	91
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	104	1	107	110	3	99	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	107	1	105	109	4	102	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	106	1	121	102	17	109	118
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	102	1	104	103	1	99	102
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	108	1	108	105	3	108	108
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	109	1	110	105	5	105	109
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	103	1	101	97	4	104	104

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	297361-2
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	103	1	113	99	13	104	107
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	102	1	101	99	2	103	101
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	99	1	107	102	5	104	106

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	14	07/06/2022	07/06/2022		[NT]	[NT]
Date analysed	-			[NT]	14	07/06/2022	07/06/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	14	0.03	0.03	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	14	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid ethanol	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid ethanol	µg/L	0.5	Org-029	[NT]	14	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	[NT]	14	98	101	3	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	[NT]	14	105	109	4	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	[NT]	14	100	101	1	[NT]	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	[NT]	14	105	104	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	[NT]	14	102	101	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	[NT]	14	81	81	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	[NT]	14	101	104	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	[NT]	14	105	106	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	[NT]	14	108	108	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	[NT]	14	103	96	7	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	[NT]	14	105	98	7	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	[NT]	14	103	97	6	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	[NT]	14	115	106	8	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	[NT]	14	109	103	6	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	[NT]	14	91	79	14	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	[NT]	14	120	113	6	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	[NT]	14	114	117	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	[NT]	14	118	110	7	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	[NT]	14	105	101	4	[NT]	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	[NT]	14	113	108	5	[NT]	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	[NT]	14	112	106	6	[NT]	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	[NT]	14	105	99	6	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	[NT]	14	108	107	1	[NT]	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	[NT]	14	104	101	3	[NT]	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	[NT]	14	107	102	5	[NT]	[NT]

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PFAS in Soil Extended - ## Percent recovery for the surrogate/matrix spike is not possible to report as the high concentration of analytes in sample 297361-1 have caused interference.



# Sampling Event Factual Report, November 2022

PFAS OMP - RAAF Base Williamtown

04-May-2023

Doc No. 20230504\_OMP002\_WLM\_SamplingEventFactualReport\_Rev0

# Sampling Event Factual Report, November 2022

PFAS OMP - RAAF Base Williamtown

Client: Department of Defence

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Prepared by

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AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.



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## List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
AIR	Annual Interpretive Report
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
JBT	Jervis Bay Territory
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Analytical Testing Authority
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMP	Ongoing Monitoring Plan
ORP	Oxidation Reduction Potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control

Acronym	Term
RPD	Relative Percentage Difference
SAQP	Sample and Analysis Quality Plan
SD	Sediment
SW	Surface Water
SWL	Standing Water Level
TOC	Top of Casing
WQM	Water Quality Meter

## List of Units

Units	Term
°C	Degrees Celsius
µg/L	Micrograms per Litre
µS/cm	MicroSiemens per Centimetre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mV	MilliVolts

## 1.0 Introduction

### 1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the RAAF Base Williamtown (the 'Site') and the Williamtown Management Area in the NSW & JBT Region. The location of the Site and Management Area is shown in **Figure F1** in **Appendix A**.

The OMP (AECOM, 2019) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Annual interpretive reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the November 2022 biannual sampling event, specifically highlighting first-time detections and/or new exceedances of human health or ecological screening criteria for the sum of Perfluorooctane sulfonic acid (PFOS) and Perfluorohexane sulfonic acid (PFHxS) (herein referred to as PFOS+PFHxS), PFOS and/or Perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance (Version 0.2)* issued in May 2021 (Defence, 2021).

### 1.2 Objectives

The objectives were to:

- implement the OMP (AECOM, 2019) prepared as part of the Detailed Environmental Investigations; and
- collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of PFAS.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

The objective of this phase of works was to implement the scope of works for the November 2022 biannual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2022).



## 2.0 Scope of Work

The scope of works was completed generally in accordance with the SAQP (AECOM, 2022), as follows:

- obtain permission (where required) to conduct works at the Site, off-Site publicly accessible areas and at private properties
- gauging of groundwater level in monitoring wells prior to collection of samples
- groundwater sampling and collection of water quality parameters at 92 of 94 scheduled monitoring wells and bores (refer to **Table 1** below and **Figure F2** in **Appendix A** for specific locations. Note that one additional location scheduled for annual sampling was inadvertently included in this sampling event.
- surface water sampling and collection of water quality parameters at 21 of 22 scheduled surface water locations (refer to **Table 2** below and **Figure F3** in **Appendix A** for specific locations)
- sediment sampling at 24 of 25 scheduled sediment locations (refer to **Table 3** below and **Figure F4** in **Appendix A** for specific locations)
- soil sampling at all 12 scheduled soil locations (refer to **Table 4** below and **Figure F5** in **Appendix A** for specific locations)
- collection of field duplicate samples at a rate of 1 in 10 primary samples
- analysis of samples for PFAS suite at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of Sampling Event Factual Report.

Note: due to privacy considerations, selected monitoring locations are unable to be shown on the figures in **Appendix A**.

**Table 1** Groundwater Sampling Locations

Area	Description	Sampling Location	Total
On-Site	Former & Current Fire Station (Facility 165)	MW196, MW198, MW202S, MW202D	4
	Disused Fire Training Pit (Facility 479)	MW166, MW167, MW168, MW169S, MW169D	5
	Former DEMS Landfill (Facility 394)	MW172, MW240D, MW281S, MW282S	4
	Ordnance Loading Area	MW244S, MW244D	2
	Lake Cochran	MW108S, MW108D, MW109D, MW175D, MW179S, MW179D, MW466, MW468	8
	Northeast Landfill	MW156D, MW209S*, MW209D*, MW433	4
	Trade Waste Treatment Plant (Facility 480)	MW106S, MW106D, MW208, MW212	4
	HWC Pump Station 7	MW134I, MW134D	2

Area	Description	Sampling Location	Total
East of Site	Pump Station 9 Eastern flank of PFAS plume	MW130S, MW130D, MW132S, MW132D, MW160, MW318S, MW318D, MW829	8
	Moors Drain Eastern flank of PFAS plume	MW121, MW122, MW162S, MW162D, MW247S, MW247D	6
West of Site	Existing Monitoring Wells West of PFAS plume	MW107S, MW107D, MW241S, MW241D, MW280S, MW315S, MW315D	7
Southern Area	Existing Monitoring Wells & Bores Southern portion of PFAS plume	MW146S, MW146AD, <b>MW271S, MW271D</b> , MW278S, MW278D	6
Cabbage Tree Road Area	Existing Monitoring Wells & Bores Southern portion of PFAS plume	MW124, MW125S, MW125D, MW126S, MW126D, <b>MW139, MW178, MW230S, MW236S, MW236D, MW238D, MW238S, POT107**</b>	13**
Lavis Lane Area	Monitoring Wells Southern edge of PFAS plume	MW128S, MW128D, MW163, MW279S and MW316D	5
Salt Ash Area	Existing Monitoring Wells & Bores Eastern portion of PFAS plume	MW118, MW123, MW256S, MW256D, MW257S, MW257D, MW258S, MW258D, MW260S, MW260D, MW263D, MW263S	12
Fullerton Cove Area	Existing Monitoring Wells & Bores Southern edge of PFAS plume	<b>MW231D, MW231S</b> , MW232S, MW232D, <b>POT382</b>	5
<b>Total</b>			<b>95**</b>
<p>* Location not sampled</p> <p>** POT107 is not scheduled for biannual sampling, however was inadvertently included for sampling in November 2022. Sub-total / total counts adjusted accordingly.</p> <p><b>Bold</b> text denotes private property location</p>			

Table 2 Surface Water Sampling Locations

Area	Sampling Location
Lake Cochran & On-Site Drains	SW047, SW048, SW108, SW110
Dawsons Drain	SW055, SW059, SW060
Fourteen Foot Drain	SW062, <b>SW600**</b>
Ten Foot Drain	SW081
Moors Drain	SW001, SW005, SW006, SW007, SW009, SW011*, SW014
Fullerton Cove Ring Drain	<b>SW259</b>
Tilligerry Creek	<b>SW019</b> , SW023, SW024, SW079
<b>Total</b>	<b>22</b>
<p>* Location not sampled</p> <p>** Location sampled for the first time during this sampling event</p>	

Area	Sampling Location
<b>Bold</b> text denotes private property location	

Table 3 Sediment Sampling Locations

Area	Sampling Location
Lake Cochran & On-Site Drains	SD047, SD048, SD108, SD110
Dawsons Drain	SD055, SD059, SD060
Fourteen Foot Drain	SD062, <b>SD600</b> **
Ten Foot Drain	SD081
Moors Drain	SD001, SD005, SD006, SD007, SD009, SD011*, SD014
Fullerton Cove Ring Drain	<b>SD259</b>
Fullerton Cove (tidal gate outlet)	<b>SD254, SD255, SD326</b>
Tilligerry Creek	<b>SD019</b> , SD023, SD024, SD079
<b>Total</b>	<b>25</b>
* Location not sampled	
** Location sampled for the first time during this sampling event	
<b>Bold</b> text denotes private property location	

Table 4 Soil Sampling Locations

Area	Sampling Location	Number of locations
<b>Flood Areas</b>	2 per flood area	SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112
<b>Total</b>		<b>12</b>
Note: Soil samples were collected from the designated flood areas outlined in the OMP (AECOM, 2019)		

### 3.0 Deviations from the SAQP

The November 2022 biannual sampling event was completed in general accordance with the SAQP (AECOM, 2022) with the exception of the deviations outlined in **Table 5** below.

**Table 5 Deviations from SAQP (AECOM, 2022)**

SAQP Deviation	Comment / Justification	Impact on Dataset
Samples, and associated gauging data and field parameters, were not collected from 2 of the 94 scheduled groundwater sampling locations.	Groundwater monitoring wells MW209S and MW209D were covered by a soil stockpile and could not be gauged and sampled during this event.	The lack of gauging and sampling data for MW209S and MW209D is not considered to have a significant impact on the dataset, or present a significant data gap, as two other monitoring wells (MW165D and MW433) within the same area were able to be gauged and sampled during this event.
Sample, and associated field parameters, were collected from unscheduled groundwater sampling locations.	Groundwater location PO107 was erroneously sampled during this sampling event. The location is scheduled to be sampled on an annual basis instead, as such it was not due to be sampled in November 2022 but in May 2023.	The additional data collected is not considered to have any impact on the dataset. PFAS results for POT107 from this sampling event are within historical ranges for the location.
Samples, and associated field parameters, were not collected from 1 of the 22 scheduled surface water locations.	Surface water location SW011 was inaccessible, due to the access path being flooded, and could not be sampled during this sampling event.	The lack of sampling data for SW011 is not considered to have a significant impact on the data or present a significant data gap, as two upstream surface water locations (SW005 and SW014) and one downstream surface water location (SW009) were able to be sampled.
Samples were not collected from 1 of the 25 scheduled sediment locations.	Sediment location SD011 was inaccessible, due to the access path being flooded, and could not be sampled during this sampling event.	The lack of sampling data for SD011 is not considered to have a significant impact on the data or present a significant data gap, as two upstream sediment locations (SD005 and SD014) and one downstream surface water location (SD009) were able to be sampled.
An unscheduled foam sample was collected in the vicinity of a scheduled surface water location.	<p>During the sampling event, foam of unknown origin was observed at off-Site surface water location SW024 (targeting Tilligerry Creek).</p> <p>A surface water sample at SW024 was collected as per the SAQP. An unscheduled, opportunistic sample of the foam was also collected and submitted to the laboratory for PFAS analysis. The sample was denoted as OTH075 and, upon arrival to the laboratory, was separated into a distinct laboratory report, as is not part of the intended OMP scope.</p>	There is no impact to the OMP dataset collected. As not strictly part of the ongoing monitoring, the foam sample (OTH075) results will be discussed in the 2023 Annual Interpretive Report which covers data from July 2022 to June 2023.

## 4.0 Methodology

### 4.1 Sampling Methodology

The methodology used for the November 2022 biannual sampling event was in general accordance with the SAQP (AECOM, 2022) and is summarised in **Table 6** below.

**Table 6 Sampling Methodology**

Item	Details
Groundwater gauging	<p>The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.</p> <p>In addition, a targeted gauging round including 28 selected monitoring wells was completed to generate data for the groundwater elevation contours and assess groundwater flow direction. The targeted gauging round was completed on 11 November 2022.</p>
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for groundwater and surface water samples.</p> <p>Field parameters were collected using a calibrated water quality meter (WQM). The equipment supplier and field calibration records are provided in <b>Appendix C</b>.</p>
Sampling methodology	<p><b>Groundwater Monitoring Wells</b></p> <p>Groundwater samples were generally collected from each monitoring well using HydraSleeves™, a no-purge sampling methodology.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round, based on a review of the well construction log. For this event, all the HydraSleeves™ were installed during previous sampling rounds in May 2022 and November 2021.</p> <p>Once sampling was completed, new HydraSleeves™ were deployed in each of the monitoring wells, within the screened interval depth in preparation for the next sampling round.</p> <p>At locations where the HydraSleeves™ failed to deploy, or had been removed prior to the sampling event, AECOM collected groundwater samples using dedicated, disposable bailers. During this sampling event, a bailer was used at monitoring location MW179 as the HydraSleeve™ was unable to be retrieved during sampling.</p> <p>Monitoring location MW829 was also sampled with a bailer as the location is a non-traditional well with no well cap or gatic. As such, no HydraSleeve™ was able to be installed.</p> <p><b>Residential Bores</b></p> <p>Bore water samples were collected by placing a laboratory provided sample bottle beneath the tap outlet to collect the “first flush” of water.</p> <p><b>Surface Water</b></p> <p>Surface water samples were collected from immediately below the water surface (approximately 10 centimetres [cm] below the surface water level, where depth permitted) to minimise collection of sediment, surface film or floating materials in the samples.</p> <p>At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p>

Item	Details
	<p><b>Sediment</b></p> <p>Sediment samples representative of potentially deposited sediments were collected from within the water body, using a hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). A new laboratory supplied container was used at each location for collection of samples.</p> <p><b>Soil</b></p> <p>Soil samples were collected using a hand trowel to a maximum depth of 0.1 mbgl. A new laboratory supplied container was used at each location for collection of samples.</p>
QA/QC Samples	<p>A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained. To facilitate the QA/QC program the following sample types were obtained during the sampling program:</p> <ul style="list-style-type: none"> <li>• <i>Intra-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Inter-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Rinsate blanks</i> collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory limit of reporting (LOR).</li> </ul> <p>For this November 2022 biannual sampling event, the QA/QC samples included:</p> <ul style="list-style-type: none"> <li>• 16 x intra-laboratory duplicates (9 groundwater, 3 surface water, 3 sediment and 1 soil) which met the target frequency</li> <li>• 16 x inter-laboratory duplicates (9 groundwater, 3 surface water, 3 sediment and 1 soil) which met the target frequency</li> <li>• 18 x rinsate blanks, which met the target frequency.</li> </ul> <p>The data validation assessment is presented in <b>Appendix D</b>.</p>
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for PFAS suite at the standard limit of reporting (LOR).</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>A summary of the laboratory results is presented in <b>Section 5.3</b> and the laboratory certificates are presented in <b>Appendix E</b>.</p>

## 4.2 Adopted Screening Criteria

Guidance documents used to assess the dataset include the following:

- Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.
- Department of Health, 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS)*.
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** and **Table 8** below.

**Table 7 Summary of Adopted Screening Criteria: Water**

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>				
Water – Groundwater and Surface Water	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the TDI for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values.
		PFOA	0.56 µg/L	For PFHxS, DoH 2017 noted that 'FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS'.  <i>All groundwater and surface water results were compared to these criteria.</i>



Media	Pathway	Compound	Criteria	Comment/Reference
Water – Surface Water	Recreational use	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted in the PFAS NEMP, 2020.  <i>All surface water results were compared to these criteria.</i>
		PFOA	10 µg/L	
<b>Ecological Receptors</b>				
Water – Groundwater and Surface Water	Freshwater	PFOS	0.0002 3 µg/L	The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.  The 99% species protection level (for freshwater and interim marine) has been applied for high value conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.  <i>All groundwater and surface water results were compared to these criteria.</i>
		PFOA	19 µg/L	

Table 8 Summary of Adopted Screening Criteria: Soil

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>				
Soil	Public Open Space	PFOS + PFHxS	1 mg/kg	The values presented in the PFAS NEMP, 2020 are based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.  The assumptions utilised in the derivation of the criteria in terms of exposure are adopted from the NEPM, 2013 Health Investigation Level D. The values make several assumptions including 8 hours spent indoors and 1 hour spent outdoors at a site such as a shop, office, factory or industrial site.  The PFAS NEMP, 2020 notes these soil guidance values should only be used to assess potential human exposure through direct soil contact, with simultaneous investigation of other factors including leaching, off-Site transport, bioaccumulation and secondary exposure. Further, the
		PFOA	10 mg/kg	



Media	Pathway	Compound	Criteria	Comment/Reference
				<p>degree of conservatism in the soil criteria means that exceeding these values does not necessarily indicate an unacceptable risk to human health, provided other exposure pathways are controlled.</p> <p><i>The off-Site soil results were compared to the most relevant exposure scenario (Public Open Space for soil samples collected from flood areas).</i></p>
Ecological Receptors				
Soil	Interim soil ecological -indirect exposure (All land uses)	PFOS	0.01 mg/kg	<p>The values are presented in the PFAS NEMP, 2020 which published interim guidance values for ecological receptors, for use in Site investigations. The values were adopted from Canadian Federal Environmental Quality Guidelines, 2017 for Commercial and Industrial use (coarse soil). The values are assumed to protect against potential impacts on freshwater life from PFOS originating from soil that may enter surface water and groundwater.</p> <p>The values are considered for interim use noting further research is required to review and amend (if necessary) these values for Australian conditions.</p> <p><i>All soil results collected from off-Site open space areas (soil samples collected from flood areas) were compared against the direct and indirect screening criteria.</i></p>
		PFOA	-	
	Interim soil ecological – direct exposure (All land uses)	PFOS	1 mg/kg	
		PFOA	10 mg/kg	

### 4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022). Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) requirements.

## 5.0 Field Observations and Results

### 5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the November 2022 biannual sampling event completed between 7 and 25 November 2022 are summarised in **Table 9** below.

**Table 9** General Observations

Items	Observations
Weather Conditions	During the sampling event, the weather was observed to be mostly dry and warm, with maximum daily temperatures between 23.2 °C (9 November 2022) and 29.4 °C (14 November 2022). A cumulative 27 mm of rainfall was recorded at Williamstown (Williamstown RAAF, Station 061078) (Bureau of Meteorology, 2023) during the sampling event, with most of the rainfall recorded on 14 November 2022.
Estate Management Works, Training Activities and/or Construction Works.	During the November 2022 sampling event, monitoring wells MW209S and MW209D could not be accessed due to the presence of soil stockpiles over the wells, located in the North East Landfill area.

### 5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the November 2022 biannual sampling event are summarised in **Table 10**, below.

**Table 10** Field Observations and Measurements

Item	Description
Monitoring Well Network Condition	<p>All wells sampled were observed to be in good condition with the exception of the following:</p> <ul style="list-style-type: none"> <li>MW238S and MW198 were observed to have damaged gatic lids. Additionally, no J-cap was present in MW198. AECOM will attempt to repair and/or replace these gatic lids ahead of the next scheduled sampling event.</li> <li>MW107S, MW107D, MW212, MW231D, MW236S, MW236D, MW258D had water in well gatics above top of casing. The water was removed prior to sampling at each location, however minor water ingress was noted at MW107S and MW107D.</li> <li>MW278D had water in well gatic below top of casing.</li> <li>MW108S and MW108D were missing the gatic cover bolts. AECOM will attempt to replace bolts during the next scheduled sampling event.</li> <li>MW106S, MW106D, MW108S, MW126S, MW126D, MW232D, MW241S and MW282S appeared to be filling up with sediment at the base of the well casing, based on the gauged total well depth and original well construction details. AECOM proposes to mobilise ahead of the next sampling event and attempt to clear the monitoring wells by purging them with monsoon pumps.</li> <li>MW109D appeared to be blocked above the screen depth. AECOM will attempt to unblock the well ahead of the next sampling event and investigate any repercussions on the validity of the data collected prior to preparing the next Sampling Event Factual Report.</li> <li>MW209S and MW209D were unable to be accessed as the wells were buried beneath stockpiled soil.</li> </ul>

Item	Description
Water Observations	<p>Foam of unknown origin was observed at off-Site surface water location SW024 (targeting Tilligerry Creek). No visible signs of contamination were observed in the remaining surface water and groundwater locations sampled.</p> <p>Sulphurous odours were noted at 24 groundwater locations (MW107S, MW108D, MW108S, MW109D, MW118, MW124, MW132D, MW132S, MW134I, MW160, MW163, MW175D, MW231D, MW236D, MW236S, MW247S, MW258S, MW263S, MW271S, MW281S, MW315D, MW315S, MW466, MW468). Organic odours were noted at five groundwater locations (MW122, MW162D, MW256D, MW278S and MW278D) and two surface water locations (SW059 and SW600).</p>
Depth to Groundwater and Flow Direction	<p>Depth to groundwater ranged from 0.000 (MW107S/D, MW231D) and 2.150 (MW132D) metres below top of casing (mbTOC). Groundwater elevation ranged between -0.031 (MW128S) and 8.597 (MW244D) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in <b>Table T1</b> in <b>Appendix B</b>.</p> <p>The inferred groundwater flow direction is to the south and southeast, towards Tilligerry Creek and Fourteen Foot Drain, and to the north and northeast, towards the south of Tilligerry Creek, Fourteen Foot Drain and Ten Foot Drain (refer to <b>Figure F6-1</b> and <b>F6-2</b> in <b>Appendix A</b>), which was generally consistent with previous flow directions. Note that the groundwater elevation contours in <b>Figure F6-1</b> and <b>Figure F6-2</b> (in <b>Appendix A</b>) are based on the gauging of selected wells on 11 November 2022 to minimise the potential for temporal variability.</p>
Geochemical Parameters	<p>Groundwater and surface water geochemical parameters were measured during the collection of water samples. The readings are presented in <b>Table T2</b> and <b>Table T3</b> in <b>Appendix B</b> and are summarised below:</p> <p><b>Groundwater Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 0.44 mg/L (MW126D) to 9.54 mg/L (MW168) indicating poor to well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 37.1 µS/cm (MW202D) to 24,855 µS/cm (MW316D) indicating fresh to saline conditions.</li> <li>• pH ranged from 5.28 (MW236S) to 7.81 (MW128D) indicating moderately acidic to neutral conditions.</li> <li>• Redox ranged from 44.5 mV (MW258D) to 378.2 mV (MW278D) indicating mildly reducing to oxidising conditions.</li> </ul> <p><b>Surface Water Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 1.55 mg/L (SW081) to 9.48 mg/L (SW048) indicating generally well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 8.22 µS/cm (SW019) to 21,470 µS/cm (SW005) indicating fresh to saline conditions.</li> <li>• pH ranged from 5.35 (SW047) to 7.84 (SW600) indicating slightly acidic to neutral conditions.</li> <li>• Redox ranged from 155.7 mV (SW081) to 363.8 mV (SW047) indicating mildly reducing to oxidising conditions.</li> </ul>
Soil and Sediment Observations	<p>Soil and sediment sampled and logged during this monitoring event comprised sand, silt and clay materials with minor inclusions of gravels and trace shell fragments, and varying amounts of organic material (roots, leaves, grass).</p> <p>No anthropogenic inclusions or staining was observed. Organic odours were noted in three sediment locations (SD001, SD081 and SD600).</p>

Item	Description
	Refer to in <b>Table T4</b> in <b>Appendix B</b> for a summary of soil and sediment classifications and observations.

## 5.3 Summary of Analytical Results

### 5.3.1 Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary, 93 primary groundwater samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 69 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted human health screening criteria in 24 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 41 primary samples.

Deviations from the historical dataset are reported in **Table 11** and graphically on **Figure F7** in **Appendix A**.

**Table 11 Deviations from Historical Dataset: Groundwater**

Deviation Type	Groundwater sampling location	PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		Nov 2022	Previous maximum	Nov 2022	Previous maximum	Nov 2022	Previous maximum
First-time detections of PFOS+PFHxS PFOS and/or PFOA in groundwater	MW232D	0.18	<LOR	There were no first-time detections in the dataset.		0.18	<LOR
	MW257D	There were no first-time detections in the dataset.		0.02	<LOR	There were no first-time detections in the dataset.	
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines in groundwater	MW232D	0.18	<LOR	There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in groundwater	MW232D	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.18	<LOR
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria						

### 5.3.2 Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, 21 primary surface water samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 20 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted drinking water human health screening criteria in 20 primary samples

- PFOS+PFHxS and/or PFOA exceeded the adopted recreational use human health screening criteria in 10 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 20 primary samples.

Deviations from the historical dataset are provided in **Table 12** and on **Figure F8** in **Appendix A**.

**Table 12 Deviations from Historical Dataset - Surface Water**

Deviation Type	Surface water sampling location	Sum of PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		Nov 2022	Previous maximum	Nov 2022	Previous maximum	Nov 2022	Previous maximum
First-time detections of PFOS+PFHxS PFOS and/or PFOA in surface water	SW600	2.11	N/A	0.06	N/A	1.42	N/A
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines in surface water	SW600	2.11	N/A	There were no new exceedances of the NEMP Human Health Screening Criteria (Drinking Water) in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) recreational guidelines in surface water	SW600	2.11	N/A	There were no new exceedances of the NEMP Human Health Screening Criteria (Recreational) in the dataset.		There are no applicable NEMP Human Health Screening Criteria (Recreational).	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in surface water	SW600	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		1.42	N/A
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria						
N/A	Not applicable – no historical data available.						
<b>Note:</b> SW600 was sampled for the first time during this sampling event and as such it has no historical data. All detections and exceedances were flagged as first-time detections and new exceedances.							

### 5.3.3 Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T7** in **Appendix B**. In summary, 24 primary sediment samples were analysed for PFAS compounds, with concentrations of PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in all 24 primary samples.

Deviations from the historical dataset are provided in **Table 13** and on **Figure F9** in **Appendix A**.

**Table 13** Deviations from Historical Dataset - Sediment

Deviation Type	Sediment sampling location	PFOS+PFHxS (mg/kg)		PFOA (mg/kg)		PFOS (mg/kg)	
		Nov 2022	Previous maximum	Nov 2022	Previous maximum	Nov 2022	Previous maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in sediment	SD600	0.0178	N/A	There were no first-time detections in the dataset. N/A		0.0164	N/A
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
N/A	Not applicable – no historical data available						
<b>Note:</b> SD600 was sampled for the first time during this sampling event and as such it has no historical data. All detections and exceedances were flagged as first-time detections and new exceedances.							

### 5.3.4 Soil Analytical Results

The PFAS soil analytical results from this sampling event are presented in **Table T8** in **Appendix B**. In summary, 12 primary soil samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 11 primary samples
- PFOS+PFHxS and/or PFOA did not exceed the adopted human health screening criteria in any primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in two primary samples.

Deviations from the historical dataset are reported in **Table 14** and graphically on **Figure F8** in **Appendix A**.

**Table 14 Deviations from Historical Dataset: Soil**

Deviation Type	Soil sampling location	PFOS+PFHxS (mg/kg)		PFOA (mg/kg)		PFOS (mg/kg)	
		Nov 2022	Previous maximum	Nov 2022	Previous maximum	Nov 2022	Previous maximum
First-time detections of PFOS+PFHxS PFOS and/or PFOA in soil	SS103	There was no first-time detection in the dataset.		0.0009	<LOR	There was no first-time detection in the dataset.	
First-time exceedance of the NEMP (HEPA, 2020) Human Health Screening Criteria in soil	-	There were no first-time exceedances of the NEMP Human Health Screening Criteria in the dataset.		There were no first-time exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
First-time exceedance of the NEMP (HEPA, 2020) Ecological Screening Criteria in soil	-	There are no applicable NEMP Ecological Screening Criteria.		There were no first-time exceedances of the NEMP Ecological Screening Criteria in the dataset.		There were no first-time exceedances of the NEMP Ecological Screening Criteria in the dataset.	
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria						

## 5.4 Historical Sampling Data

Historical groundwater, surface water, sediment and soil sampling data are presented in **Tables T9, T10, T11 and T12** (respectively) in **Appendix B**.



## 6.0 Summary and Next Sampling Events

### 6.1 Summary of Monitoring Event

The November 2022 biannual sampling event was completed between 7 and 25 November 2022. The findings and the recommended actions are summarised in **Table 15** below.

**Table 15 Summary of Sampling Event**

Item	Comment	Recommended Action
Access to sampling locations	<p>The following were accessed and able to be sampled:</p> <ul style="list-style-type: none"> <li>92 groundwater locations (plus 1 annual location)</li> <li>21 surface water locations</li> <li>24 sediment locations</li> <li>12 soil locations</li> </ul>	Nil.
Location unable to be located, inaccessible or dry	<p>Groundwater samples from two monitoring wells (MW209S and MW209D) were unable to be sampled as the locations were inaccessible due to the placement of a soil stockpile over the wells.</p> <p>Samples from one co-located surface water / sediment location (SW011 / SD011) were not collected as the access path to the locations were flooded.</p>	AECOM will attempt to access and sample locations MW209S, MW209D, SW011 and SD011 during the next scheduled sampling event.
Monitoring well network condition	<p>All monitoring wells that were able to be accessed were noted to be in good condition, with the exception of the following observations:</p> <ul style="list-style-type: none"> <li>some locations with damaged or missing gatic lids or bolts (MW108S, MW108D, MW198, MW238S)</li> <li>some locations with water in the well gatic, with the water either above or below top of casing (MW107S, MW107D, MW212, MW231D, MW236S, MW236D, MW258D and MW278D). While water was removed from within the gatic prior to sampling at each location, minor water ingress was noted at two locations (MW107S and MW107D).</li> </ul> <p>Additionally, one monitoring well (MW109D) was reported to be blocked above the screen level and other wells appear to be filling with sediment (MW106S, MW106D, MW108S, MW126S, MW126D, MW232D, MW241S and MW282S).</p>	<p>AECOM will attempt to replace gatic lids and bolts which were damaged or missing during the next scheduled sampling event.</p> <p>AECOM will attempt to unblock monitoring well MW109D ahead of the next sampling event.</p> <p>Additionally, AECOM proposes to mobilise ahead of the next sampling event and attempt to clear the monitoring wells by purging them with monsoon pumps.</p>

Item	Comment	Recommended Action
Analytical Results	93 groundwater primary samples, 21 surface water primary samples, 24 sediment primary samples and 12 soil primary samples were analysed.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
First-time detections of PFOS+PFHxS, PFOS and/or PFOA	<p>Two of 93 groundwater locations sampled (MW232D and MW257D) reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.</p> <p>One of 21 surface water locations sampled (SW600) reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA. It is noted that this location was sampled for the first time during this sampling event.</p> <p>One of 24 sediment locations sampled (SD600) reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA. It is noted that this location was sampled for the first time during this sampling event.</p> <p>One of 12 soil location sampled (SS103) reported first-time detections of PFOS+PFHxS, PFOA and/or PFOS.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted human health screening criteria	<p>One of 93 groundwater locations sampled (MW232D) reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>One of 21 surface water locations sampled (SW600) reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA. It is noted that this location was sampled for the first time during this sampling event.</p> <p>No soil locations reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted ecological screening criteria	<p>One groundwater location out of the 93 sampled (MW232D) reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>One of 21 surface water locations sampled (SW600) reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA. It is noted that this location was sampled for the first time during this sampling event.</p> <p>No soil locations reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

## **6.2 Upcoming Sampling Events**

The next OMP sampling event is scheduled for May 2023.

## **6.3 Upcoming Annual Interpretive Report**

The next annual interpretive report is scheduled to be delivered in Q2 2023, which will cover the 12-month sampling period between July 2021 and June 2022.

## 7.0 References

- AECOM, 2019. *PFAS Ongoing Monitoring Plan – May 2019, RAAF Base Williamtown*. 27 May 2019.
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- National Health and Medical Research Council (NHMRC), 2011. *Australian Drinking Water Guidelines 6, 2011. Version 3.7 Updated January 2022*. January 2022.
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.
- NEPC, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.
- NEPC, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.
- NEPC, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.
- Standards Australia (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*
- Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling*

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# Appendix A

Figures

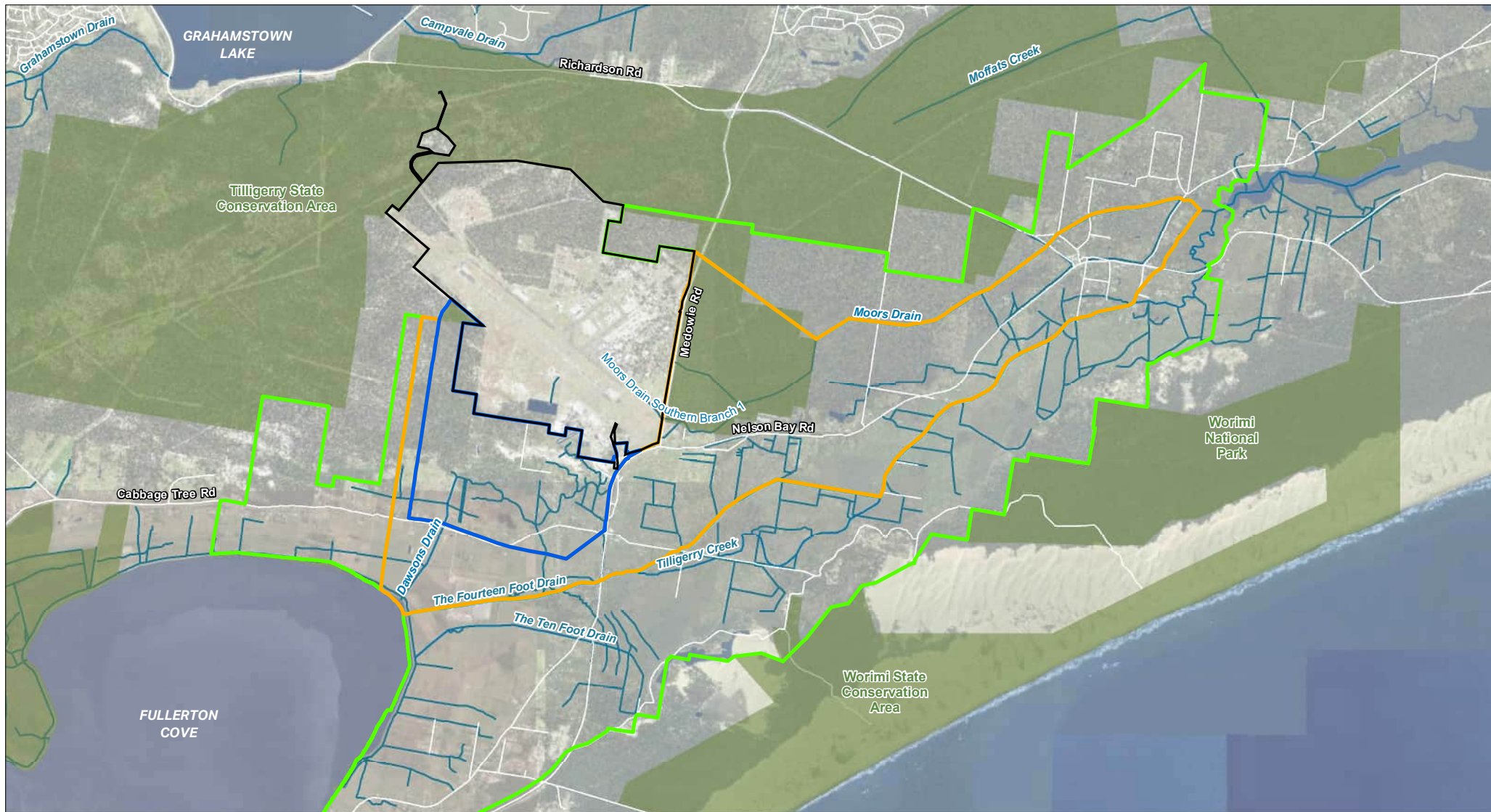


FIGURE F1: SITE LAYOUT

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- NPWS Reserve
- Waterway



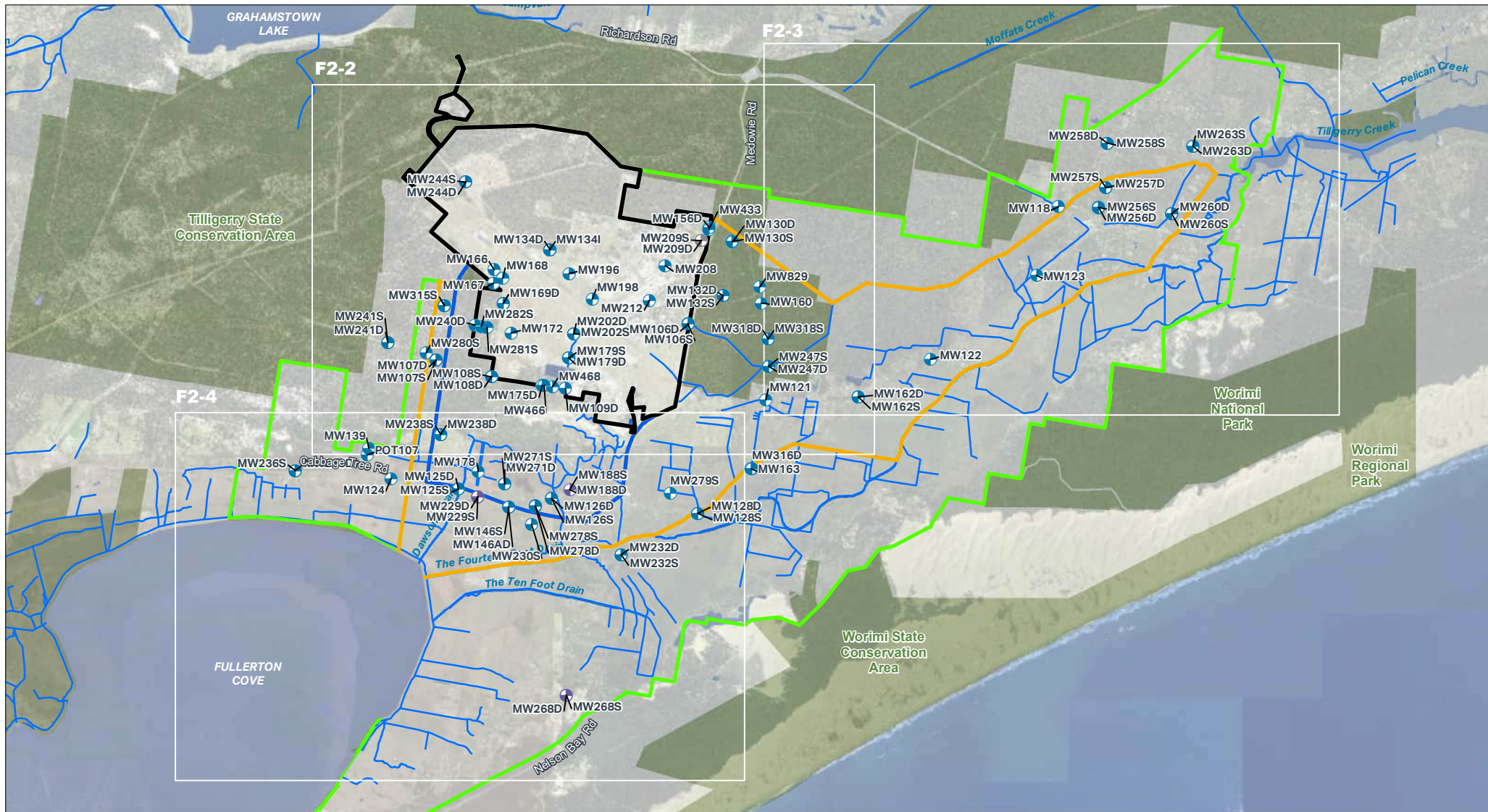
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 PROJECT NUMBER:  
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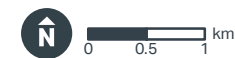




**FIGURE F2-1: GROUNDWATER SAMPLING LOCATIONS OVERVIEW**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Groundwater Location (sampled)
- ⊕ Groundwater Location (gauged)
- ⊖ Groundwater Location (not sampled)
- ~ Waterway



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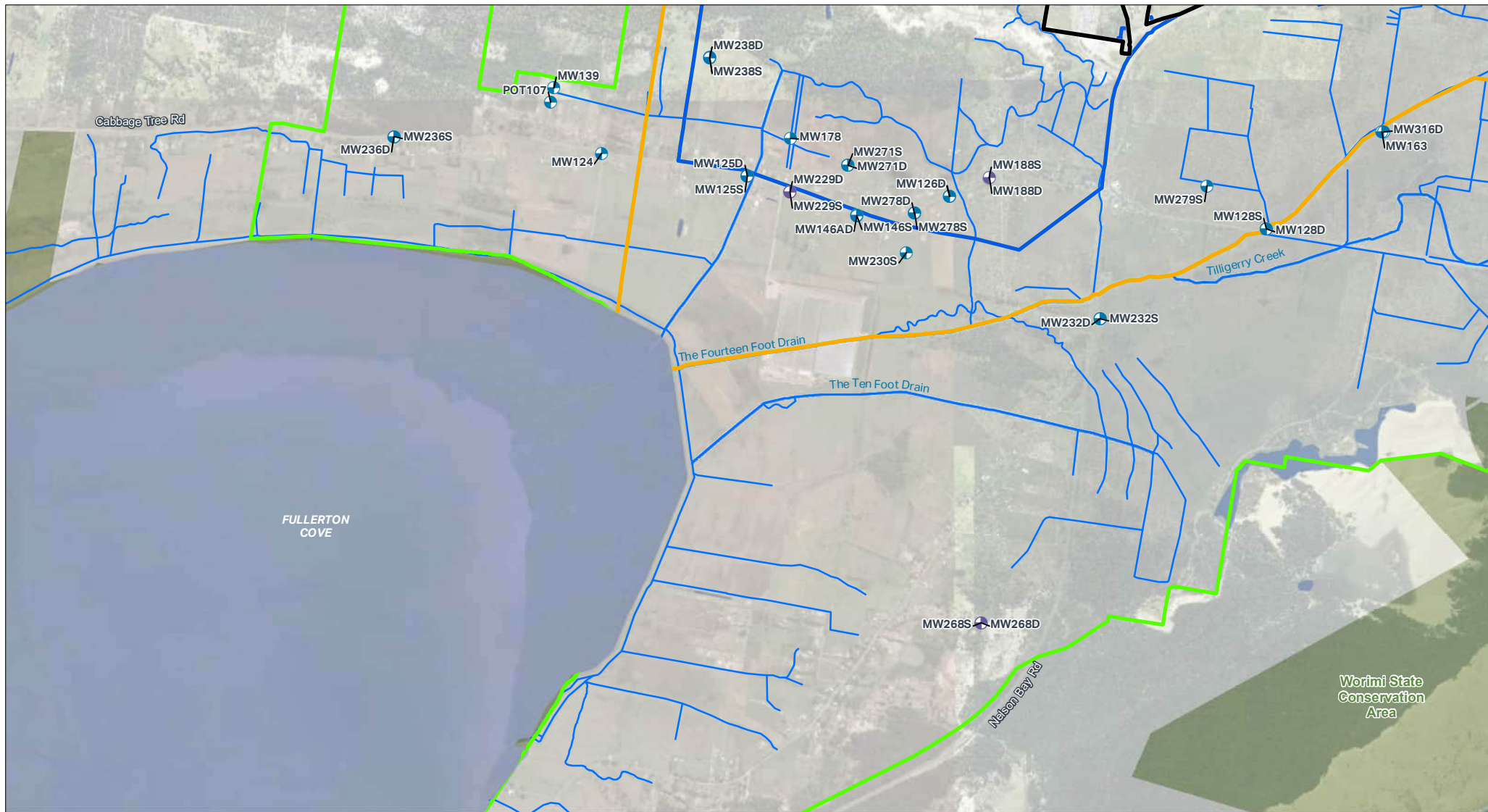
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**FIGURE F2-4: GROUNDWATER SAMPLING LOCATIONS - SOUTH**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- ~ Waterway
- ⊕ Groundwater Location (sampled)
- ⊕ Groundwater Location (gauged)
- ⊕ Groundwater Location (not sampled)



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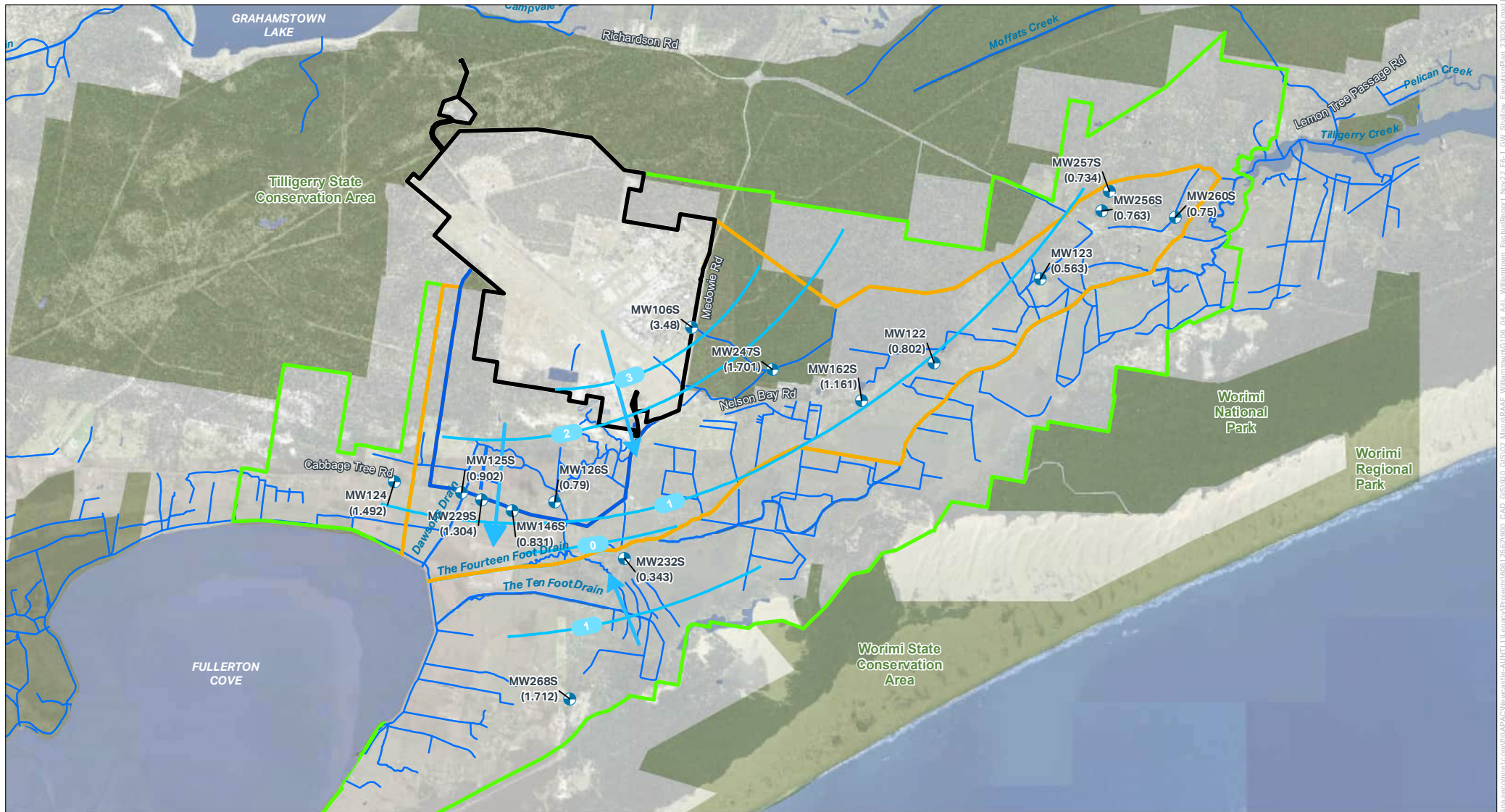








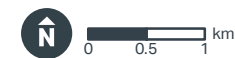




**FIGURE F6-1: GROUNDWATER ELEVATION PLAN - SHALLOW**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- + Groundwater Location (gauged)
- Inferred Groundwater Flow Direction
- Groundwater elevation Contour (Shallow Wells; mAHD)

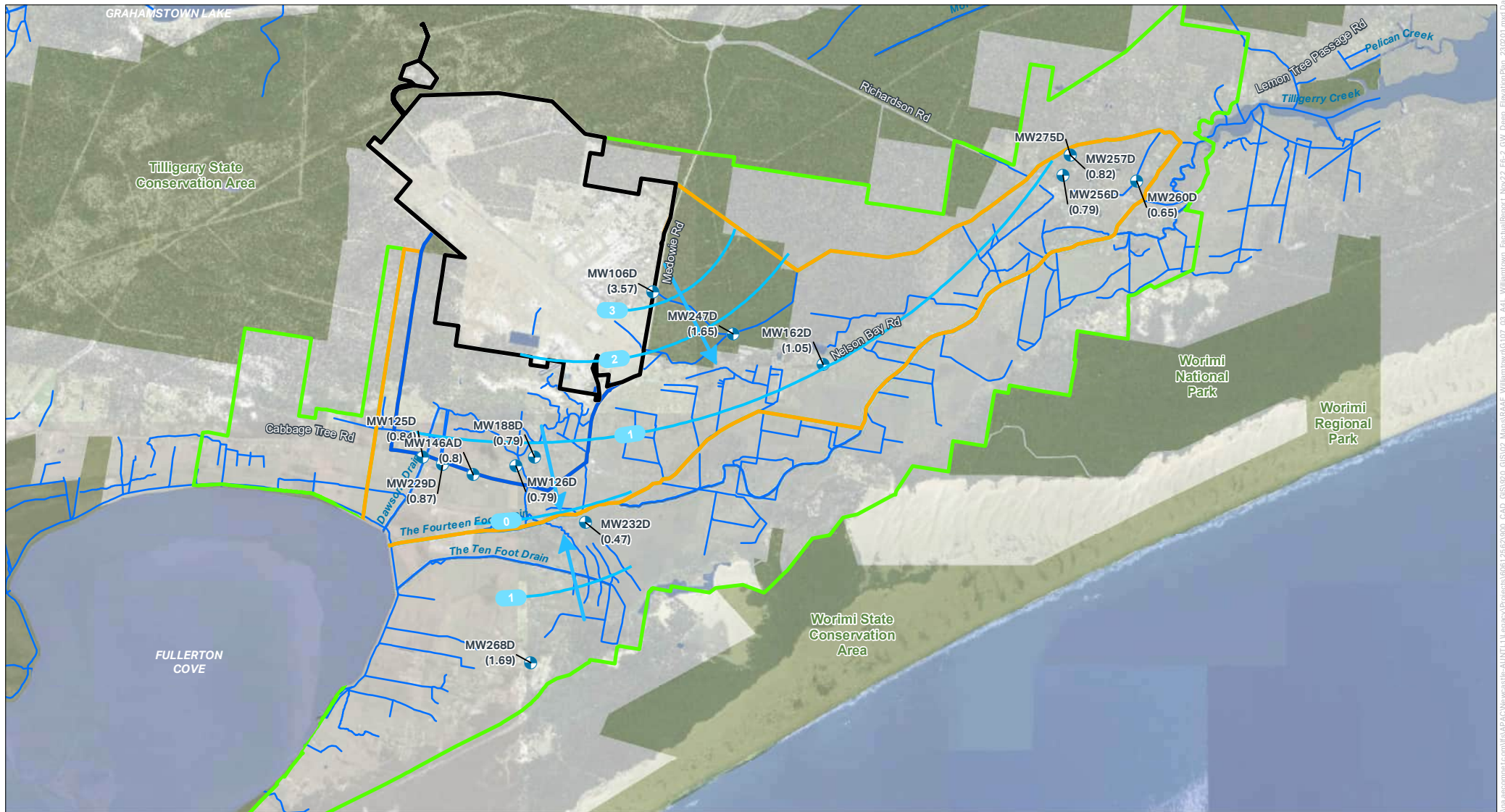


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**FIGURE F6-2: GROUNDWATER ELEVATION PLAN - DEEP**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Groundwater Location (gauged)
- ➔ Inferred Groundwater Flow Direction
- Groundwater Elevation Contour (Deep Wells; mAHD)
- ~ Waterway

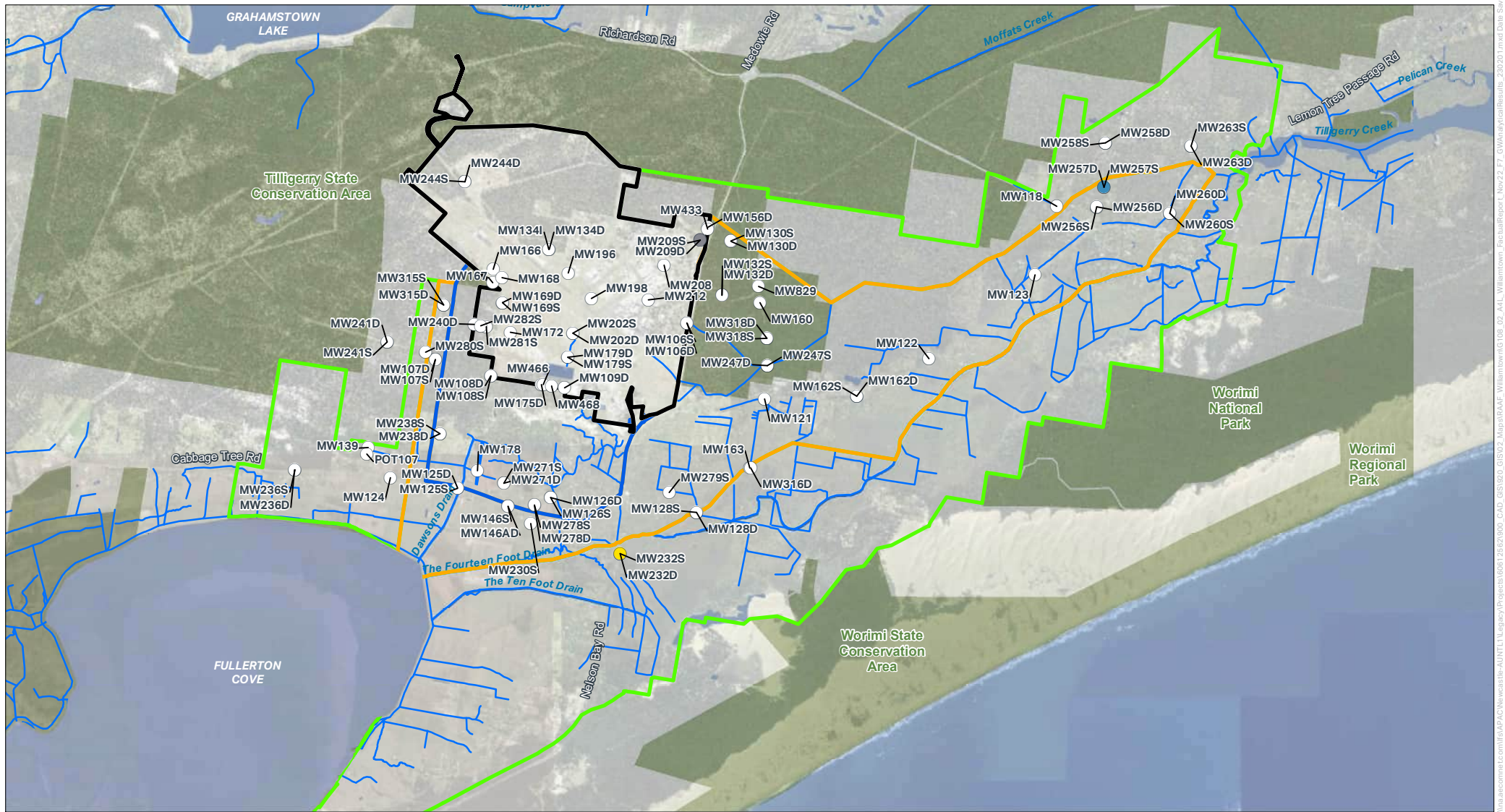


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**FIGURE F7 GROUNDWATER ANALYTICAL RESULTS**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- ~ Waterway
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- New Exceedance of Human Health and/or Ecological Screening Criteria for PFOS+PFHxS, PFOS and/or PFOA
- Sampled, no first-time detection or exceedance
- Location not accessed and/or sampled



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 60612562  
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 Department of Defence

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\\naacommie\csm\WVAPAC\Newcastle-AUNTLT\Legacy\Projects\60612562\0908\_CAD\_GIS\020\_GIS\02\_GIS\02\_Maps\RAAF-Williamtown\GIS\02\_Atl-Williamtown-FactualReport\_Nov22\_FF\_GWAnalyticalResults\_230220\_1.mxd Table\_Saved\_2022072023





**FIGURE F8: SURFACE WATER ANALYTICAL RESULTS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Waterway
- New Exceedance of Human Health and/or Ecological Screening Criteria for PFOS+PFHxS, PFOS and/or PFOA
- Sampled, no first-time detection or exceedance
- Location not accessed and/or sampled



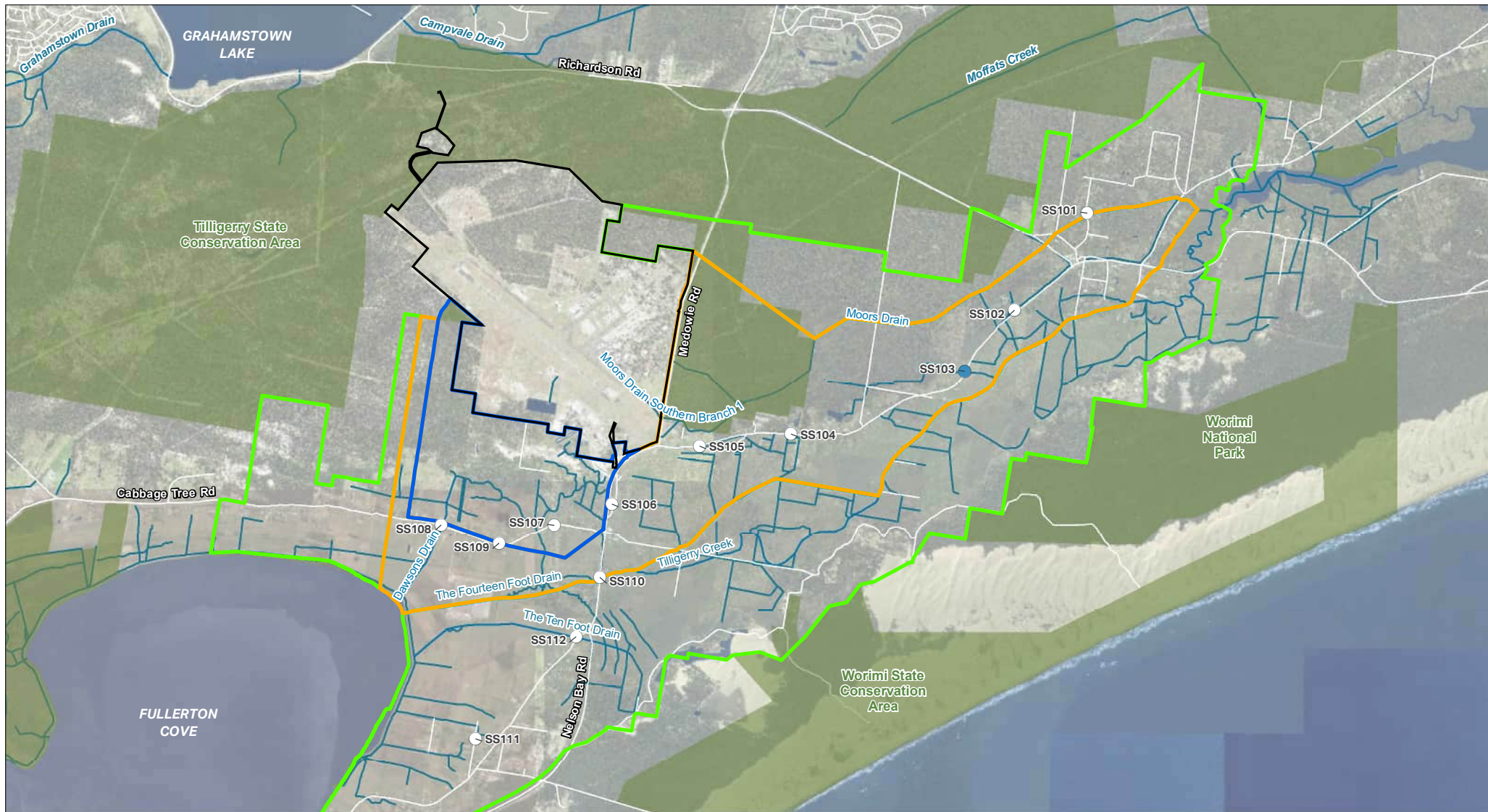
PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
 Sampling Event Factual Report – November 2022  
 RAAF Base Williamtown (0908)  
 PROJECT NUMBER:  
 60612562  
 CLIENT  
 Department of Defence

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Williamstown LGA\APAC\Newcastle-AUNTLT\Legacy\Projects\60612562\0908\_CAD\_GIS\620\_GIS\02\_Maps\RAAF\_Williamtown\G109\_01\_A4L\_Williamtown\_FactualReport\_Nov22\_F8\_SurfaceWaterAnalyticalResults\_230127.mxd Date Saved: 27/01/2023





**FIGURE F9: SOIL SAMPLING ANALYTICAL RESULTS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- First-time detection of PFOS+PFHxS, PFOS and/or PFOA
- Sampled, no first-time detection or exceedance



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
 Sampling Event Factual Report – November 2022  
 RAAF Base Williamtown (0908)  
 PROJECT NUMBER:  
**60612562**  
 CLIENT  
 Department of Defence

Not all available data are presented herein. For privacy reasons, selected sample points have been removed under advice from private property owners.

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Williamstown (0908) PFAS OMP - AUNTIL Legacy Projects (0908) 25/02/2020 - CAD - GIS/200 - GIS/202 - Maps/RAAF - Williamtown/110\_01\_A4L - Williamtown - FactualReport - Nov22 - PFAS - SoilSamplingAnalyticalResults - 23/01/21.mxd Date Saved: 2021

DRAFT

# Appendix B

Tables

Table T1 Groundwater Gauging

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW106D	MW106_D	4.77	18.5	20	-	11/11/2022 9:06	1.201	3.569	-	Gauging visit only.
MW106D	MW106_D	4.77	18.5	20	18.5	8/11/2022 15:51	1.190	3.580	19.56	Good condition.
MW106S	MW106_S	4.678	3.5	5	3.5	8/11/2022 15:46	1.200	3.478	4.59	Good condition.
MW106S	MW106_S	4.678	3.5	5	-	11/11/2022 9:13	1.198	3.480	-	Gauging visit only.
MW107D	MW107_D	3.362	18.5	20	19	11/11/2022 11:16	0.000	3.362	19.94	Gatic full of water above top of casing and sediment. Drained prior to opening well cap, however some water ingress noted.
MW107S	MW107_S	3.322	2	5	3.5	11/11/2022 11:06	0.000	3.322	4.80	Gatic full of water above top of casing and sediment. Drained prior to opening well cap, however some water ingress noted.
MW108D	MW108_D	3.08	18.5	20	18.5	10/11/2022 10:21	0.385	2.695	19.80	Gatic lid loose, not bolted down.
MW108S	MW108_S	2.95	2	5	3.5	10/11/2022 10:14	0.300	2.650	4.34	Gatic lid loose, not bolted down.
MW109D	MW109_D	3.157	18.5	20	19	10/11/2022 9:29	1.053	2.104	2.89	Well likely blocked.
MW118	-	1.674	4.5	6	5	7/11/2022 12:35	0.430	1.244	5.92	Good condition.
MW121	-	1.589	4.5	6	5	8/11/2022 11:50	0.370	1.219	5.97	Good condition.
MW122	-	1.851	5.5	7	6	10/11/2022 15:05	1.071	0.780	6.96	Good condition.
MW122	-	1.851	5.5	7	-	11/11/2022 11:01	1.049	0.802	-	Gauging visit only.
MW123	-	1.524	4.5	6	-	11/11/2022 11:41	0.961	0.563	-	Gauging visit only.
MW123	-	1.524	4.5	6	5	8/11/2022 11:20	0.906	0.618	5.97	Good condition.
MW124	-	2.42	6	7.5	-	11/11/2022 10:15	0.928	1.492	-	Gauging visit only.
MW124	-	2.42	6	7.5	6.5	9/11/2022 8:30	0.916	1.504	7.40	Good condition.
MW125D	MW125_D	2.173	18.5	20	-	11/11/2022 10:10	1.336	0.837	-	Gauging visit only.
MW125D	MW125_D	2.173	18.5	20	19	9/11/2022 9:15	1.280	0.893	20.26	Gatic full of sediment, gatic lid not secured due to J-cap height.
MW125S	MW125_S	2.197	6	7.5	6.5	9/11/2022 9:02	1.331	0.866	7.50	Gatic full of sediment, gatic lid not secured due to J-cap height.
MW125S	MW125_S	2.197	6	7.5	-	11/11/2022 10:09	1.295	0.902	-	Gauging visit only.
MW126D	MW126_D	1.794	18.5	20	17.8	9/11/2022 12:15	1.004	0.790	18.84	Good condition.
MW126D	MW126_D	1.794	18.5	20	-	11/11/2022 10:27	1.000	0.794	-	Gauging visit only.
MW126S	MW126_S	1.79	5.5	7	-	11/11/2022 10:25	1.000	0.790	-	Gauging visit only.
MW126S	MW126_S	1.79	5.5	7	5.5	9/11/2022 12:26	0.993	0.797	6.47	Good condition.
MW128D	MW128_D	0.843	9.3	10.3	9.5	7/11/2022 12:31	0.210	0.633	10.45	Good condition.
MW128S	MW128_S	0.909	4.7	6.2	5	7/11/2022 12:18	0.940	-0.031	6.16	Good condition.
MW130D	MW130_D	5.858	15	16.5	15.5	8/11/2022 13:30	0.235	5.623	16.49	Good condition.
MW130S	MW130_S	5.794	1	4	2.5	8/11/2022 13:20	0.170	5.624	3.84	Good condition.
MW132D	MW132_D	6.138	15	16.5	15	8/11/2022 13:07	2.150	3.988	16.21	Good condition.
MW132S	MW132_S	6.082	3	6	4	8/11/2022 13:11	2.125	3.957	9.80	Good condition.
MW134D	MW134_D	8.75	18.5	20	19	14/11/2022 9:47	1.733	7.017	19.97	Good condition. Sand in gatic.
MW134I	MW134_I	8.71	10	11.5	10.5	14/11/2022 9:53	1.689	7.021	11.48	Good condition. Sand in gatic.
MW139	-	1.986	1	4	2.5	14/11/2022 12:50	0.250	1.736	3.95	Good condition.
MW146AD	MW146D_A	1.62	18.5	20	-	11/11/2022 9:42	0.825	0.795	-	Gauging visit only.
MW146AD	MW146D_A	1.62	18.5	20	19	9/11/2022 10:35	0.810	0.810	20.19	Good condition. Under tall grass.
MW146S	MW146_S	1.802	0.8	3.8	-	11/11/2022 9:42	0.971	0.831	-	Gauging visit only.
MW146S	MW146_S	1.802	0.8	3.8	2.5	9/11/2022 10:24	0.965	0.837	3.77	Good condition. Under tall grass.
MW156D	MW156_D	7.34	19.5	21	20	8/11/2022 11:06	1.270	6.070	21.64	Good condition.
MW160	-	4.212	1	4	2.5	8/11/2022 14:05	0.860	3.352	4.02	Good condition.
MW162D	MW162_D	2.876	18.6	20.1	-	11/11/2022 10:57	1.822	1.054	-	Gauging visit only.
MW162D	MW162_D	2.876	18.6	20.1	19	7/11/2022 11:09	1.781	1.095	20.17	Good condition.
MW162S	MW162_S	2.838	1.5	4.5	-	11/11/2022 10:56	1.677	1.161	-	Gauging visit only.
MW162S	MW162_S	2.838	1.5	4.5	3	7/11/2022 11:18	1.644	1.194	4.22	Good condition.
MW163	-	1.207	0.5	3.5	2	7/11/2022 11:47	0.840	0.367	4.07	Good condition.
MW166	-	7.1	0.8	3.8	2.5	9/11/2022 15:04	0.815	6.285	3.68	Good condition.
MW167	-	7.19	0.7	3.7	2.5	9/11/2022 14:21	1.685	5.505	4.30	Good condition.
MW168	-	6.78	0.7	3.7	2.5	9/11/2022 14:28	0.940	5.840	3.44	Good condition.
MW169D	MW169_D	5.8	18	19.5	18.3	9/11/2022 14:06	0.540	5.260	19.30	Good condition.
MW169S	MW169_S	5.83	0.7	3.7	2.5	9/11/2022 13:53	0.566	5.264	3.70	Good condition.
MW172	-	4.88	0.7	3.7	2	10/11/2022 11:02	0.350	4.530	3.38	Good condition. Data logger in well.
MW175D	MW175_D	4.11	19.5	21	20	10/11/2022 9:59	1.195	2.915	21.50	Good condition.
MW178	-	1.76	1.2	4.2	3	9/11/2022 12:02	0.580	1.180	4.23	Good condition.
MW179D	MW179_D	4.76	18.5	20	18.5	10/11/2022 12:12	0.850	3.910	19.71	Good condition.
MW179S	MW179_S	4.71	0.8	3.8	2.5	10/11/2022 12:02	0.820	3.890	3.79	Good condition.
MW188D	MW188_D	1.354	18.5	20	-	11/11/2022 10:44	0.561	0.793	-	Gauging visit only.
MW188S	MW188_S	1.439	0.8	3.8	-	11/11/2022 10:45	-	-	-	Gauging visit only. Unable to locate in long grass.

Table T1 Groundwater Gauging

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW196	-	6.76	0.8	3.8	2.5	9/11/2022 8:59	0.850	5.910	-	Good condition. Hydrosleeve dropped in well. Unable to retrieve. Total depth cannot be measured, Hydrosleeved blocked at 2.7mbtoc.
MW198	-	6.11	0.8	3.8	2.5	9/11/2022 8:34	1.210	4.900	3.82	Gatic lid damaged and J-cap missing.
MW202D	MW202_D	5.17	19.5	21	20	10/11/2022 12:24	1.071	4.099	20.96	Good condition.
MW202S	MW202_S	5.21	0.8	3.8	2.5	10/11/2022 12:17	1.120	4.090	3.70	Good condition.
MW208	-	6.99	1.2	4.2	3	8/11/2022 15:26	1.914	5.076	4.11	Good condition.
MW209D	MW209_D	6.53	18	19.5	18.5	8/11/2022 11:16	-	-	-	Unable to access, well buried under stockpiled excavated material.
MW209S	MW209_S	6.47	0.6	3.6	2.5	8/11/2022 11:16	-	-	-	Unable to access, well buried under stockpiled excavated material.
MW212	-	6.04	1.2	4.2	3	11/11/2022 8:44	1.570	4.470	4.12	Gatic full of water below top of casing.
MW229D	MW229_D	1.92	18.5	20	-	11/11/2022 10:02	1.055	0.865	-	Gauging visit only.
MW229S	MW229_S	1.91	1	4	-	11/11/2022 10:03	0.606	1.304	-	Gauging visit only.
MW230S	MW230_S	0.939	2.5	4	3	14/11/2022 12:18	0.100	0.839	4.01	Good condition.
MW231D	MW231_D	0.571	16	17.5	16.5	14/11/2022 17:05	0.000	0.571	17.70	Gatic full of water above top of casing. Drained prior to opening well cap.
MW231S	MW231_S	0.625	1	4	2.5	14/11/2022 17:10	0.630	-0.005	4.01	Good condition.
MW232D	MW232_D	1.324	18.5	20	-	11/11/2022 12:12	0.855	0.469	-	Gauging visit only.
MW232D	MW232_D	1.324	18.5	20	18.5	8/11/2022 8:58	0.810	0.514	19.47	Good condition.
MW232S	MW232_S	1.148	1	4	-	11/11/2022 12:12	0.805	0.343	-	Gauging visit only.
MW232S	MW232_S	1.148	1	4	2.5	8/11/2022 9:02	0.715	0.433	4.60	Good condition.
MW236D	MW236_D	2.715	18.5	20	19	15/11/2022 9:34	0.682	2.033	20.23	Gatic full of water above top of casing. Drained prior to opening well cap.
MW236S	MW236_S	2.707	1	4	2.5	15/11/2022 9:27	0.676	2.031	3.90	Gatic full of water above top of casing. Drained prior to opening well cap.
MW238D	MW238_D	2.211	18.5	20	19	14/11/2022 10:45	0.614	1.597	20.28	Good condition.
MW238S	MW238_S	2.27	1	4	2.5	14/11/2022 10:38	0.681	1.589	4.00	Gatic lid broken.
MW240D	MW240D	5.742	18.5	20	19	10/11/2022 9:36	0.925	4.817	20.31	Good condition.
MW241D	MW241_D	5.449	18.5	20	19	10/11/2022 15:00	0.730	4.719	20.21	Good condition.
MW241S	MW241_S	5.559	1	4	2	10/11/2022 14:47	0.790	4.769	3.17	Good condition.
MW244D	MW244_D	9.457	18.5	20	19	9/11/2022 9:30	0.860	8.597	20.95	Good condition.
MW244S	MW244_S	9.603	1	4	2.5	9/11/2022 9:22	1.020	8.583	4.69	Good condition.
MW247D	MW247_D	2.529	18.5	20	-	11/11/2022 12:26	0.882	1.647	-	Gauging visit only.
MW247D	MW247_D	2.529	18.5	20	19	8/11/2022 14:51	0.870	1.659	20.30	Good condition.
MW247S	MW247_S	2.468	1	4	-	11/11/2022 12:27	0.767	1.701	-	Gauging visit only.
MW247S	MW247_S	2.468	1	4	2.5	8/11/2022 14:55	0.710	1.758	3.87	Good condition.
MW256D	MW256_D	1.534	18.5	20	-	11/11/2022 11:10	0.743	0.791	-	Gauging visit only.
MW256D	MW256_D	1.534	18.5	20	19	7/11/2022 13:30	0.691	0.843	20.35	Good condition.
MW256S	MW256_S	1.518	1	4	-	11/11/2022 11:11	0.755	0.763	-	Gauging visit only.
MW256S	MW256_S	1.518	1	4	2.5	7/11/2022 13:45	0.692	0.826	3.99	Good condition.
MW257D	MW257_D	1.819	18.5	20	-	11/11/2022 11:18	0.998	0.821	-	Gauging visit only.
MW257D	MW257_D	1.819	18.5	20	19	7/11/2022 14:09	0.965	0.854	20.20	Good condition.
MW257S	MW257_S	1.639	1	4	-	11/11/2022 11:16	0.905	0.734	-	Gauging visit only.
MW257S	MW257_S	1.639	1	4	2.5	7/11/2022 14:20	0.873	0.766	3.80	Good condition.
MW258D	MW258_D	2.903	18.5	20	19	7/11/2022 15:20	0.593	2.310	20.11	Gatic full of water above top of casing. Drained prior to opening well cap.
MW258S	MW258_S	2.916	1	4	2.5	7/11/2022 15:08	0.657	2.259	3.95	Good condition.
MW260D	MW260_D	2.08	18.5	20	-	11/11/2022 11:27	1.427	0.653	-	Gauging visit only.
MW260D	MW260_D	2.08	18.5	20	19	8/11/2022 9:38	1.390	0.690	20.36	Good condition.
MW260S	MW260_S	2.124	1	4	-	11/11/2022 11:26	1.374	0.750	-	Gauging visit only.
MW260S	MW260_S	2.124	1	4	2.5	8/11/2022 9:30	1.304	0.820	3.92	Good condition.
MW263D	MW263_D	1.314	18.5	20	19	8/11/2022 8:33	0.544	0.770	20.25	Good condition.
MW263S	MW263_S	1.328	1	4	2.5	8/11/2022 8:23	0.515	0.813	3.93	Good condition.
MW268D	MW268D	3.362	18.5	20	-	11/11/2022 14:11	1.670	1.692	-	Gauging visit only.
MW268S	MW268_S	3.232	2	5	-	11/11/2022 14:02	1.520	1.712	5.00	Gauging visit only.
MW271D	MW271_D	1.308	18.5	20	19	14/11/2022 11:24	0.190	1.118	20.29	Good condition.
MW271S	MW271_S	1.316	1	4	2.5	14/11/2022 11:17	0.130	1.186	3.99	Good condition.
MW278D	MW278_D	1.289	18.5	20	19	9/11/2022 11:28	0.595	0.694	20.26	Gatic full of water below top of casing.
MW278S	MW278_S	1.253	1.5	3	2	9/11/2022 11:45	0.470	0.783	3.00	Gatic full of grass and sediment.
MW279S	MW279_S	1.295	0.8	3.8	2.5	7/11/2022 13:27	0.730	0.565	4.65	Good condition.
MW280S	MW280_S	3.831	1	4	2.5	11/11/2022 10:44	0.080	3.751	3.67	Good condition.
MW281S	MW281_S	5.29	1	4	2.5	10/11/2022 10:20	0.680	4.610	4.00	Good condition.
MW282S	MW282_S	5.37	1	4	2.5	10/11/2022 10:08	0.520	4.850	3.51	Good condition.
MW315D	MW320D	6.16	18	20	19	11/11/2022 9:41	0.575	5.585	20.44	Good condition.
MW315S	MW320S	6.18	1	4	2.5	11/11/2022 9:51	0.610	5.570	3.77	Good condition.
MW316D	MW319D	1.2	18	20	19	7/11/2022 11:32	0.670	0.530	21.28	Good condition.

Table T1 Groundwater Gauging

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW318D	MW318_D	2.63	18.5	20	19	8/11/2022 13:33	0.470	2.160	20.28	Good condition.
MW318S	MW318_S	2.67	1	4	2.5	8/11/2022 13:48	0.530	2.140	3.89	Good condition.
MW433	W33	6.926	unknown	unknown	3	8/11/2022 11:09	0.910	6.016	3.66	Good condition.
MW466	W66	4.32	unknown	unknown	2.2	10/11/2022 9:52	1.602	2.718	3.21	Good condition.
MW468	W68	4.02	unknown	unknown	3	10/11/2022 9:42	1.213	2.807	4.04	Good condition.
MW829	PS9_BORE 30	n/a	n/a	n/a	n/a	8/11/2022 14:00	n/a	n/a	n/a	Not traditional monitoring well. Not gauged.
POT107	BWS107	n/a	n/a	n/a	n/a	14/11/2022 13:00	n/a	n/a	n/a	Residential bore tap.
POT382	-	n/a	n/a	n/a	n/a	14/11/2022 16:32	n/a	n/a	n/a	Residential bore tap.

**Notes**

mbTOC            meters below Top of Casing  
 mAHD            meters Australian Height Datum  
 n/a                Not applicable  
 -                  Not measured

Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Sample Comment	Field Measurements					
				Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW106D	MW106_D	8/11/2022 15:54	Light brown, low turbidity, no odour, no sheen.	1.08	19.7	145.2	5.22	61.6	267.4
MW106S	MW106_S	8/11/2022 15:47	Clear, no turbidity, no odour, no sheen. Trace suspended solids at base of hydrasleeve.	0.79	18.6	112.2	5.29	142.0	347.8
MW107D	MW107_D	11/11/2022 11:17	Clear, low turbidity, no odour, no sheen.	1.07	21.8	157.7	5.27	80.3	286.1
MW107S	MW107_S	11/11/2022 11:10	Yellow, low turbidity, sulfurous odour, no sheen. Surface water ingress, suspended solids.	0.62	20.8	212.2	5.17	68.5	274.3
MW108D	MW108_D	10/11/2022 10:23	Brown/orange, high turbidity, sulfurous odour, no sheen. Fine brown suspended solids. Suspended solids settling in bottom of hydrasleeve.	1.78	19.5	255.0	6.07	-19.5	186.3
MW108S	MW108_S	10/11/2022 10:16	Clear, low turbidity, sulfurous odour, no sheen. Fine yellow suspended solids.	4.41	19.2	89.6	4.85	1.2	207.0
MW109D	MW109_D	10/11/2022 9:30	Yellow, low turbidity, sulfurous odour, no sheen.	2.41	17.8	274.7	5.21	-93.2	112.6
MW118	-	7/11/2022 12:38	Clear, no turbidity, sulfurous odour, no sheen. Trace orange suspended solids.	2.72	20.6	132.8	5.11	-64.2	141.6
MW121	-	8/11/2022 11:55	Clear, no turbidity, no odour, no sheen. Trace suspended solids.	1.02	21.9	95.6	5.71	-103.8	102.0
MW122	-	10/11/2022 15:08	Light yellow, low turbidity, organic odour, no sheen. Black suspended solids.	1.12	19.8	450.4	5.59	33.9	239.7
MW123	-	8/11/2022 11:23	Brown/orange, medium turbidity, no odour, no sheen. Suspended solids.	1.30	20.0	202.5	5.99	10.1	215.9
MW124	-	9/11/2022 8:33	Yellow, no turbidity, sulfurous odour, no sheen.	1.73	19.3	106.2	-*	5.0	210.8
MW125D	MW125_D	9/11/2022 9:18	Light brown, low turbidity, no odour, no sheen.	1.70	21.2	161.8	6.11	-108.5	97.3
MW125S	MW125_S	9/11/2022 9:03	Brown/orange, medium turbidity, no odour, no sheen.	1.38	20.4	506.0	5.64	12.6	218.4
MW126D	MW126_D	9/11/2022 12:19	Light yellow, low turbidity, no odour, no sheen.	0.44	21.2	143.0	6.19	-4.6	201.2
MW126S	MW126_S	9/11/2022 12:28	Light yellow, no turbidity, no odour, no sheen. Orange suspended solids.	1.42	18.7	204.4	6.20	-18.0	187.8
MW128D	MW128_D	7/11/2022 12:32	Clear, low turbidity, no odour, no sheen.	1.50	20.4	1533.0	7.81	-103.9	101.9
MW128S	MW128_S	7/11/2022 12:20	Clear, no turbidity, no odour, no sheen.	5.00	21.1	5778.0	7.44	25.0	230.8
MW130D	MW130_D	8/11/2022 13:34	Clear, no turbidity, no odour, no sheen.	1.70	19.3	183.6	5.04	-80.7	125.1
MW130S	MW130_S	8/11/2022 13:25	Brown, medium turbidity, no odour, no sheen. Suspended solids.	2.55	20.9	156.7	4.21	5.6	211.4
MW132D	MW132_D	8/11/2022 13:08	Brown, medium turbidity, sulfurous odour, no sheen. Sand and suspended solids in sleeve.	3.03	24.2	239.5	5.71	23.0	228.8
MW132S	MW132_S	8/11/2022 13:12	Clear, no turbidity, sulfurous odour, no sheen. Orange suspended solids in sleeve.	3.05	21.9	161.6	5.13	48.9	254.7
MW134D	MW134_D	14/11/2022 9:50	Clear, no turbidity, no odour, no sheen.	5.28	20.4	249.3	4.88	138.1	343.9
MW134I	MW134_I	14/11/2022 9:56	Clear, low turbidity, sulfurous odour, no sheen. Water colour becoming light brown in bottom of hydrasleeve.	1.91	18.8	188.1	4.39	64.6	270.4
MW139	-	14/11/2022 12:53	Brown, low turbidity, no odour, no sheen.	1.23	20.7	401.9	5.84	-84.5	121.3
MW146AD	MW146D_A	9/11/2022 10:36	Light yellow, no turbidity, no odour, no sheen.	1.37	20.3	144.0	6.37	-8.5	197.3
MW146S	MW146_S	9/11/2022 10:26	Light yellow, low turbidity, no odour, no sheen. Organic matter (algae-like) at base of hydrasleeve.	2.71	20.2	407.1	5.90	44.2	250.0
MW156D	MW156_D	8/11/2022 11:07	Clear, no turbidity, no odour, no sheen.	3.36	24.3	283.6	6.30	-5.4	200.4
MW160	-	8/11/2022 14:06	Yellow, low turbidity, sulfurous odour, no sheen.	1.78	20.2	188.0	4.88	19.9	225.7
MW162D	MW162_D	7/11/2022 11:13	Light brown, low turbidity, organic odour, no sheen.	2.93	21.9	340.9	4.65	160.7	366.5
MW162S	MW162_S	7/11/2022 11:24	Clear, no turbidity, no odour, no sheen. Trace suspended solids.	6.24	20.7	100.8	5.54	124.9	330.7
MW163	-	7/11/2022 11:48	Light yellow, low turbidity, sulfurous odour, no sheen.	1.69	18.2	4285.0	6.95	-139.0	66.8
MW166	-	9/11/2022 15:05	Light brown, medium turbidity, no odour, no sheen.	7.06	19.4	94.9	5.78	98.8	304.6
MW167	-	9/11/2022 14:25	Light yellow, low turbidity, no odour, no sheen. Suspended solids.	2.02	20.8	162.0	5.10	-17.5	188.3
MW168	-	9/11/2022 14:29	Dark brown, high turbidity, no odour, no sheen. Brown settled solids in sleeve.	9.54	21.6	69.0	5.95	39.1	244.9
MW169D	MW169_D	9/11/2022 14:07	Clear, medium turbidity, no odour, no sheen.	7.31	24.7	213.1	6.53	30.8	236.6
MW169S	MW169_S	9/11/2022 13:56	Light brown, low turbidity, no odour, no sheen. Orange suspended solids.	1.50	21.1	131.7	5.22	139.3	345.1
MW172	-	10/11/2022 11:04	Clear, medium turbidity, no odour, no sheen.	1.38	21.3	461.8	5.61	15.8	221.6
MW175D	MW175_D	10/11/2022 10:02	Clear, low turbidity, sulfurous odour, no sheen. Brown solids in bottom of hydrasleeve.	0.82	21.5	224.2	5.99	-46.5	159.3
MW178	-	9/11/2022 12:03	Light brown, medium turbidity, no odour, no sheen. Suspended brown solids in sleeve.	3.50	20.0	657.0	6.00	31.7	237.5
MW179D	MW179_D	10/11/2022 12:13	Light yellow, medium turbidity, no odour, no sheen.	1.23	22.1	234.2	6.07	-32.0	173.8
MW179S	MW179_S	10/11/2022 12:03	Dark brown, high turbidity, no odour, no sheen.	2.23	22.0	72.3	4.81	34.3	240.1
MW196	-	9/11/2022 9:00	Clear, no turbidity, no odour, no sheen. Sample collected with bailer.	2.39	21.3	78.2	5.75	166.1	371.9
MW198	-	9/11/2022 8:35	Light brown, low turbidity, no odour, no sheen.	2.48	19.8	177.4	5.80	168.0	373.8
MW202D	MW202_D	10/11/2022 12:29	Black/grey, high turbidity, no odour, no sheen.	3.06	20.4	37.1	5.94	76.4	282.2
MW202S	MW202_S	10/11/2022 12:19	Brown/orange, high turbidity, no odour, no sheen. Grey sand settled in bottom of hydrasleeve, fine orange suspended solids in water.	1.50	20.8	116.7	5.33	168.3	374.1
MW208	-	8/11/2022 15:27	Clear, no turbidity, no odour, no sheen.	2.41	20.8	146.7	5.42	115.8	321.6
MW209D	MW209_D	n/a	Unable to access, well buried under stockpiled excavated material.	n/a	n/a	n/a	n/a	n/a	n/a
MW209S	MW209_S	n/a	Unable to access, well buried under stockpiled excavated material.	n/a	n/a	n/a	n/a	n/a	n/a
MW212	-	11/11/2022 8:49	Grey, medium turbidity, no odour, no sheen.	5.19	19.6	175.8	6.58	160.0	365.8
MW230S	MW230_S	14/11/2022 12:21	Clear, no turbidity, no odour, no sheen.	1.68	20.2	415.1	5.87	23.2	229.0
MW231D	MW231_D	14/11/2022 17:06	Light grey, low turbidity, sulfurous odour, no sheen. Silt at bottom of hydrasleeve.	1.80	20.3	16963.0	6.75	-140.9	64.9
MW231S	MW231_S	14/11/2022 17:14	Clear, low turbidity, no odour, no sheen. Suspended solids.	1.23	18.4	16811.0	6.69	-135.5	70.3
MW232D	MW232_D	8/11/2022 8:59	Light grey, medium turbidity, no odour, no sheen.	1.47	22.2	15924.0	7.37	-84.8	121.0
MW232S	MW232_S	8/11/2022 9:03	Yellow, low turbidity, no odour, no sheen. Brown suspended solids in water.	3.06	20.4	2529.0	7.71	-83.7	122.1
MW236D	MW236_D	15/11/2022 9:40	Clear, low turbidity, sulfurous odour, no sheen. Minor white suspended gelatinous material.	1.13	19.4	138.4	5.88	-57.4	148.4
MW236S	MW236_S	15/11/2022 9:29	Light yellow, low turbidity, sulfurous odour, no sheen. White gelatinous material suspended and at base of hydrasleeve.	1.42	19.2	262.3	5.28	-10.2	195.6



Table T2 - Groundwater Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Sample Comment	Field Measurements					
				Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW238D	MW238_D	14/11/2022 10:49	Light grey, low turbidity, no odour, no sheen.	2.16	23.5	163.5	6.19	-23.9	181.9
MW238S	MW238_S	14/11/2022 10:42	Brown, medium turbidity, no odour, no sheen. Suspended solids.	2.01	21.8	123.9	5.19	-12.7	193.1
MW240D	MW240D	10/11/2022 9:50	Brown, medium turbidity, no odour, no sheen.	0.93	19.3	371.4	5.43	54.3	260.1
MW241D	MW241_D	10/11/2022 15:04	Light yellow, medium turbidity, no odour, no sheen.	1.24	20.5	113.1	6.13	-52.4	153.4
MW241S	MW241_S	10/11/2022 14:48	Clear, medium turbidity, no odour, no sheen.	5.99	22.2	223.8	5.99	-47.3	158.5
MW244D	MW244_D	9/11/2022 9:34	Clear, no turbidity, no odour, no sheen. Brown suspended solids in hydrasleeve.	2.32	19.6	239.0	6.15	64.1	269.9
MW244S	MW244_S	9/11/2022 9:23	Clear, no turbidity, no odour, no sheen.	2.25	20.2	93.6	4.28	93.8	299.6
MW247D	MW247_D	8/11/2022 14:52	Clear, no turbidity, no odour, no sheen.	1.31	22.9	153.2	6.10	91.2	297.0
MW247S	MW247_S	8/11/2022 14:56	Light brown, medium turbidity, sulfurous odour, no sheen.	1.20	20.7	118.5	5.51	-47.5	158.3
MW256D	MW256_D	7/11/2022 13:32	Brown, medium turbidity, organic odour, no sheen. Silt and settled solids at base of hydrasleeve.	1.62	21.5	80.8	5.97	-154.7	51.1
MW256S	MW256_S	7/11/2022 13:52	Brown, medium turbidity, no odour, no sheen. Silt and settled solids at base of hydrasleeve.	1.54	20.1	95.7	4.70	-79.4	126.4
MW257D	MW257_D	7/11/2022 14:12	Clear, no turbidity, no odour, no sheen. Silt at base of hydrasleeve.	1.16	20.2	88.3	5.79	-125.4	80.4
MW257S	MW257_S	7/11/2022 14:25	Brown/orange, medium turbidity, no odour, no sheen. Brown settled solids at base of hydrasleeve.	0.94	19.9	58.7	4.91	57.3	263.1
MW258D	MW258_D	7/11/2022 15:27	Yellow/brown, low turbidity, no odour, no sheen.	0.66	21.1	354.7	6.59	-161.3	44.5
MW258S	MW258_S	7/11/2022 15:10	Light brown, medium turbidity, sulfurous odour, no sheen. Silt and settled solids at base of hydrasleeve.	1.11	21.3	107.6	4.74	-76.9	128.9
MW260D	MW260_D	8/11/2022 9:45	Clear, low turbidity, no odour, no sheen. Trace suspended solids.	0.58	20.1	1321.0	6.26	-121.2	84.6
MW260S	MW260_S	8/11/2022 9:32	Light brown, low turbidity, no odour, no sheen. Silt and suspended solids.	1.51	20.1	3660.0	6.65	-149.9	55.9
MW263D	MW263_D	8/11/2022 8:37	Light yellow, no turbidity, no odour, no sheen. Trace black suspended solids.	0.71	19.0	615.0	6.93	-135.5	70.3
MW263S	MW263_S	8/11/2022 8:25	Light yellow, low turbidity, sulfurous odour, no sheen.	3.83	19.1	238.3	4.85	-68.8	137.0
MW271D	MW271_D	14/11/2022 11:28	Grey, medium turbidity, no odour, no sheen.	1.35	20.0	213.6	6.08	-32.9	172.9
MW271S	MW271_S	14/11/2022 11:18	Clear, no turbidity, sulfurous odour, no sheen. Suspended black solids.	1.99	20.2	554.0	5.01	-6.3	199.5
MW278D	MW278_D	9/11/2022 11:38	Light yellow, no turbidity, organic odour, no sheen. Black suspended solids.	1.68	21.3	133.5	6.19	172.4	378.2
MW278S	MW278_S	9/11/2022 11:51	Light yellow, low turbidity, organic odour, biosheen.	1.12	19.9	200.0	6.65	-116.6	89.2
MW279S	MW279_S	7/11/2022 13:32	Yellow/brown, medium turbidity, no odour, no sheen.	1.20	19.1	1157.0	7.08	-119.4	86.4
MW280S	MW280_S	11/11/2022 10:45	Light yellow, low turbidity, no odour, no sheen. Brown suspended solids.	1.79	23.0	164.7	4.04	55.5	261.3
MW281S	MW281_S	10/11/2022 10:21	Grey, medium turbidity, sulfurous odour, no sheen. Dark brown suspended solids in sleeve.	2.03	19.6	149.5	4.94	16.5	222.3
MW282S	MW282_S	10/11/2022 10:09	Dark yellow, medium turbidity, no odour, no sheen.	1.67	19.5	120.1	4.29	97.0	302.8
MW315D	MW320D	11/11/2022 9:42	Clear, no turbidity, sulfurous odour, no sheen. Brown solids in bottom of hydrasleeve.	1.54	20.1	171.6	5.34	2.3	208.1
MW315S	MW320S	11/11/2022 9:52	Light yellow, no turbidity, sulfurous odour, no sheen. Brown and white suspended solids.	1.05	19.3	205.8	4.46	-70.5	135.3
MW316D	MW319D	7/11/2022 11:35	Clear, no turbidity, no odour, no sheen. Orange suspended solids.	1.73	20.6	24855.0	6.56	-41.7	164.1
MW318D	MW318_D	8/11/2022 13:34	Clear, no turbidity, no odour, no sheen.	1.99	23.1	2382.0	6.38	17.2	223.0
MW318S	MW318_S	8/11/2022 13:49	Clear, no turbidity, no odour, no sheen.	1.07	22.4	266.7	5.67	-62.0	143.8
MW433	W33	8/11/2022 11:10	Light yellow, medium turbidity, no odour, no sheen. Orange suspended solids.	2.87	21.1	144.7	6.12	-48.2	157.6
MW466	W66	10/11/2022 9:55	Light yellow, low turbidity, sulfurous odour, no sheen. Orange suspended solids.	1.22	18.9	165.3	5.01	-74.4	131.4
MW468	W68	10/11/2022 9:43	Yellow, low turbidity, sulfurous odour, no sheen. Suspended yellow slime.	1.18	19.0	174.2	4.83	-40.4	165.4
MW829	PS9_BORE 30	8/11/2022 14:03	Clear, no turbidity, no odour, no sheen. Sample collected with bailer.	1.60	19.5	87.2	5.74	11.6	217.4
POT107	BWS107	14/11/2022 13:03	Clear, no turbidity, no odour, no sheen.	1.54	26.9	531.0	5.72	-42.5	163.3
POT382	-	14/11/2022 16:37	Clear, no turbidity, no odour, no sheen.	0.76	26.9	2382.0	7.51	-63.1	142.7

Notes

- mV milliVolts
- mg/L milligrams per Litre
- °C degrees Celsius
- µS/cm microSiemens per centimetre
- Corrected field Redox measurement Eh = Er + 205.8
- Not measured
- n/a Not applicable
- \* pH value reported incorrectly due to field error. Value has been excluded for reporting purposes.



Table T3 - Surface Water Geochemical Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Location Comments	Sample Comment	Field Measurements					
					Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
					mg/L	°C	µS/cm	pH_Units	mV	mV
SW001	MD1	8/11/2022 15:38	Drainage channel. Waterbody width (approx.): 3.0 m, banks up to 4.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	Clear, low turbidity, no odour, no sheen.	5.71	23.4	183.7	6.09	48.7	254.5
SW005	MD5	8/11/2022 9:06	Drainage channel with concrete culvert. Waterbody width (approx.): 4 m. Depth (approx.): 0.8 m. Water flow observed.	Light brown, low turbidity, no odour, no sheen.	2.77	21.6	21470	6.68	27.5	233.3
SW006	MD6	8/11/2022 14:56	Drainage channel with concrete culvert. Waterbody width (approx.): 1.0 m. Depth: (approx.) 0.1 m. Water flow not observed.	Brown/orange, medium turbidity, no odour, no sheen. Suspended solids.	5.53	28.5	220.6	6.31	64.6	270.4
SW007	MD7	8/11/2022 14:44	Drainage channel with concrete culvert. Grasses in creek. Waterbody width (approx.): 1.0 m. Depth (approx.): 0.2 m. Water flow observed.	Light yellow, no turbidity, no odour, no sheen. Suspended solids.	7.1	28.3	178.5	6.76	40.7	246.5
SW009	MD8	8/11/2022 15:12	Drainage channel. Waterbody width (approx.) 3 m. Depth (approx.) 0.7 m. Water flow observed.	Clear, low turbidity, no odour, no sheen. Orange suspended solids.	6.98	26.2	167.7	6.47	-18.1	187.7
SW011	MD10	n/a	Unable to access, path flooded.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW014	MD14	7/11/2022 14:51	Drainage channel. Waterbody width (approx.): 4.0 m. Depth (approx.): 0.3 m. Aquatic plants present. Water flow not observed.	Clear, no turbidity, no odour, no sheen.	6.15	27	219.3	5.77	94.1	299.9
SW019	TC12	14/11/2022 13:42	Creek. Waterbody width (approx.): 5.0 m. Depth (approx.): 1.0 m. Water flow observed.	Light brown, low turbidity, no odour, no sheen.	5.38	28.7	8.22	6.99	10.8	216.6
SW023	TC6A	8/11/2022 10:57	Creek with concrete bridge. Waterbody width (approx.): 5.0 m. Depth (approx.): 0.5 m. Water flow observed.	Brown, low turbidity, no odour, biosheen.	4.29	23.4	1209	6.87	55.8	261.6
SW024	TC7	8/11/2022 10:10	Creek with large concrete culvert. Waterbody width (approx.): 8.0 m. Depth (approx.) 2.0 m. Foam observed and foam sample collected (OTH075). Water flow observed.	Brown, low turbidity, no odour, no sheen.	5.38	25.2	7085	6.84	13.7	219.5
SW047	BD03	10/11/2022 11:58	Drainage channel. Waterbody width (approx.): 6 m. Depth (approx.) 0.1 m. Decaying organic matter, aquatic veg (lily pads), orange decayed matter fines settled on edges. Water flow observed.	Light brown, low turbidity, no odour, no sheen.	3.85	24.3	118.1	5.35	158	363.8
SW048	BD04	10/11/2022 11:33	Drainage channel. Waterbody width (approx.): 5 m. Depth (approx.) 0.3 m. Vegetation either side of bank. Suspended organic product in water. Water flow not observed.	Clear, low turbidity, no odour, no sheen.	9.48	23.4	111.3	5.9	99.7	305.5
SW055	DD1	10/11/2022 10:36	Drainage channel with concrete culvert beneath gravel road. Waterbody width (approx.): 5 m. Depth (approx.): 0.3 m deep, flowing, aquatic plants submerged and of edges. Water flow observed.	Yellow/brown, low turbidity, no odour, no sheen.	2.72	20.6	110.5	5.81	65.6	271.4
SW059	DD2	9/11/2022 9:26	Drainage channel with concrete culvert. Water flow observed.	Brown/orange, no turbidity, organic odour, no sheen.	2.76	19.7	188.7	5.61	-17	188.8
SW060	DD3	9/11/2022 12:35	Drainage channel with concrete culvert. Waterbody width (approx.): 3.0 m. Depth (approx.): 0.2 m. Algal growth in water. Water flow observed.	Light yellow, low turbidity, no odour, no sheen. Trace suspended solids.	4.43	24.7	154.4	5.65	87.2	293
SW062	DD5	7/11/2022 14:28	Drainage channel with culvert beneath road. Width (approx.): 7 m. Depth (approx.) 0.3 m. Some algae growth and submerged aquatic plants. Water flow observed.	Yellow/brown, low turbidity, no odour, no sheen.	2.37	22.6	1420	7.07	-0.5	205.3
SW079	TC2	7/11/2022 12:49	Creek. Waterbody width (approx.): 3 m. Depth unable to be estimated. Reeds and aquatic plants in water and along banks. Water flow not observed.	Grey, low turbidity, no odour, no sheen.	3.83	23.2	3315	7.03	6.3	212.1
SW081	TFD1	8/11/2022 9:27	Drainage channel with culvert. Waterbody width (approx.): 3 m. Depth (approx.): 0.5 m. Organic sheen on waterbody surface observed. Water flow not observed.	Light yellow, low turbidity, no odour, biosheen. Brown suspended solids.	1.55	19.4	428.7	6.63	-50.1	155.7
SW108	LC	10/11/2022 11:36	Lake Cochran. Waterbody width (approx.): 60 m. Depth (approx.) 0.3 m at sample point. Decomposing organic matter, aquatic plants present. Water flow not observed.	Light yellow, low turbidity, no odour, no sheen. Light yellow, orange/brown suspended solids.	6.42	24.9	126	6.08	120.8	326.6
SW110	LC_B	10/11/2022 11:11	Lake Cochran. Waterbody width (approx.) 60 m. Depth (approx.) 0.2 m at sample point. Aquatic plants present, brown film on surface. Decaying organic matter (leaves, sticks, branches). Water flow observed.	Brown, low turbidity, no odour, no sheen. Orange/brown suspended solids.	5.14	23.7	112.6	6.08	102.2	308
SW259	FCD4	15/11/2022 8:20	Drainage channel. Waterbody width (approx.): 10 m. Depth (approx.): 1 m. Water flow observed.	Brown, low turbidity, no odour, no sheen.	4.17	21.3	2916	7.01	34	239.8
SW600		25/11/2022 11:36	Drainage channel. Waterbody width (approx.) 7 m. Duck weed cover, dense aquatic plants on banks. Water flow observed.	Yellow, low turbidity, organic odour, no sheen. Suspended solids.	4.37	28.3	1352	7.84	31.1	236.9

Notes

- mV            millivolts
- mg/L        milligrams per Litre
- °C            degrees Celsius
- µS/cm      microSiemens per centimetre
- Corrected field Redox measurement Eh = Er + 205.8
- Not measured
- n/a          Not applicable

Table T4 - Sediment and Soil Observations

Location Code	Alternative Name	Sampled Date Time	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD001	MD1	8/11/2022 15:39	0.05	0.1	Silty SAND: brown, with organic material, organic odour.
SD005	MD5	8/11/2022 9:06	0.05	0.1	Sandy SILT: brown, low plasticity, medium grained sand, with rootlets, saturated.
SD006	MD6	8/11/2022 14:56	0.05	0.1	Silty SAND: dark grey, fine to coarse grained, with roots, saturated.
SD007	MD7	8/11/2022 14:42	0.05	0.1	SAND: light brown, medium to coarse grained, trace fine gravels, saturated.
SD009	MD8	8/11/2022 15:15	0.05	0.1	SAND: brown, fine to medium grain, moist.
SD011	MD10	n/a	n/a	n/a	Unable to access, path flooded.
SD014	MD14	7/11/2022 14:55	0.05	0.1	SILT: brown, low plasticity, with organic material (rootlets and leaves), saturated.
SD019	TC12	14/11/2022 13:42	0.05	0.1	Gravelly SILT: brown, low plasticity, fine gravels, high organic content (rootlets).
SD023	TC6A	8/11/2022 10:57	0.05	0.1	SILT: brown, medium plasticity, fine to medium grained sand, trace roots, saturated.
SD024	TC7	8/11/2022 10:10	0.05	0.1	SILT: brown, high plasticity, with roots, saturated.
SD047	BD03	10/11/2022 11:59	0.05	0.1	SAND: light brown, medium to coarse grained.
SD048	BD04	10/11/2022 11:41	0.05	0.1	SAND: grey, saturated, decomposing organic material present.
SD055	DD1	10/11/2022 10:41	0.05	0.1	Silty SAND: dark brown, fine to coarse grain, with rootlets, saturated.
SD059	DD2	9/11/2022 9:27	0.05	0.1	SAND: light brown, medium to coarse grained, trace fine gravels, saturated.
SD060	DD3	9/11/2022 12:35	0.05	0.1	Silty SAND: grey, fine to medium grained, with clay, saturated.
SD062	DD5	7/11/2022 14:29	0.05	0.1	Silty SAND: yellow/grey, with gravels up to 20 mm, moist.
SD079	TC2	7/11/2022 12:50	0.05	0.1	Silty SAND: black/dark brown, low plasticity, fine to medium grain sand, saturated.
SD081	TFD1	8/11/2022 9:30	0.05	0.1	Silty SAND: black/dark brown, decomposing organic material present, organic odour.
SD108	LC	10/11/2022 11:39	0.05	0.1	Silty SAND: brown, medium to coarse grain, roots, saturated.
SD110	LC_B	10/11/2022 11:19	0.05	0.1	Silty SAND: brown, medium to coarse grain, roots, moist.
SD254	FC1A	15/11/2022 8:43	0.05	0.1	CLAY: dark grey-brown, high plasticity, high organic content, with rootlets, wet.
SD255	FC1B	15/11/2022 8:38	0.05	0.1	CLAY: dark grey, high plasticity, with high organic content, with rootlets, wet.
SD259	FCD4	15/11/2022 8:20	0.05	0.1	SAND: grey-brown, medium to coarse grained, with roots, saturated.
SD326	FC1C	15/11/2022 8:33	0.05	0.1	Clayey SAND, dark brown-grey, coarse grained, high plasticity, with shell fragments, wet.
SD600		25/11/2022 11:30	0.05	0.1	Sandy SILT: black/brown, fine grain sand, rootlets present, saturated, organic odour.
SS101	SS001, SS01	7/11/2022 14:41	0.01	0.1	Sandy SILT: dark brown, medium plasticity, medium grained sand, with roots, moist.
SS102	SS002, SS02	7/11/2022 12:18	0.01	0.1	Sandy CLAY: brown, high plasticity, fine sand, moist.
SS103	SS003, SS03	7/11/2022 12:04	0.01	0.1	CLAY: brown, high plasticity, trace fine to medium sand, with roots, moist.
SS104	SS004, SS04	10/11/2022 14:44	0.01	0.1	Silty SAND: dark brown, fine to coarse grain, trace gravels and roots, dry.
SS105	SS005, SS05	10/11/2022 14:27	0.01	0.1	Silty SAND: dark brown, fine to coarse, roots and trace gravel, moist.
SS106	SS006, SS06	7/11/2022 14:10	0.01	0.1	Silty SAND: black, friable, fine to medium sand, no odour.
SS107	SS007, SS07	10/11/2022 14:14	0.01	0.1	SAND: dark brown, fine to coarse grained, with trace silt and roots, moist
SS108	SS008, SS08	9/11/2022 9:47	0.01	0.1	Silty SAND: brown, fine to coarse grained, with roots, moist.
SS109	SS009, SS09	9/11/2022 10:52	0.01	0.1	Silty SAND: brown, medium to coarse sand, trace rootlets, moist.
SS110	SS010, SS10	7/11/2022 14:35	0.01	0.1	Silty SAND: brown, rootlets, dry.
SS111	SS011, SS11	15/11/2022 10:04	0.01	0.1	Sandy CLAY: dark brown, high plasticity, coarse grained sand, trace fine gravels and rootlets.
SS112	SS012, SS12	8/11/2022 9:34	0.01	0.1	SAND: brown, rootlets present, trace rounded to subrounded gravel pieces up to 20 mm.

Notes

n/a Not applicable







Table T6 - Surface Water Analytical Results

	Per- and Poly-fluoroalkyl Substances																														
	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFAS (WA DER List)
LOR	0.01	0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01
PFAS NEMP 2020 Drinking Water	0.56			0.07																											
PFAS NEMP 2020 Freshwater 99%	19	0.00023																													
PFAS NEMP 2020 Recreational Water	10			2																											

Location Code	Alt. Name	Date	Field ID	Sample Type	Lab Report #	PFOA	PFOS	PFHxS	Sum PFHxS/PFOS	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	PFUnDA	PFTTrDA	PFTTeDA	PFPeS	PFPeA	PFNA	PFHxA	PFHpS	PFHpA	PFDS	PFDoDA	PFDA	PFBS	PFBA	MeFOSA	EtFOSE	EtFOSA	MeFOSE	MeFOSAA	FOSA	EtFOSAA	Sum PFAS	Sum PFAS (WA DER List)
SW001	MD1	8/11/2022	0908_SW001_221108	Normal	ES2240971	0.03	1.46	0.34	1.8	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	0.08	0.03	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.99	1.93
SW005	MD5	8/11/2022	0908_SW005_221108	Normal	ES2240971	<0.01	0.24	0.09	0.33	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.35	0.35
SW005	MD5	8/11/2022	0908_QC108_221108	Field_D	ES2240971	<0.01	0.24	0.12	0.36	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.38	0.38
SW005	MD5	8/11/2022	0908_QC208_221108	Interlab_D	310531	<0.01	0.17	0.09	0.27	<0.01	<0.01	<0.02	<0.02	<0.02	<0.1	<0.5	<0.01	<0.02	<0.01	0.02	<0.01	<0.01	<0.02	<0.05	<0.02	<0.01	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	0.29	-
SW006	MD6	8/11/2022	0908_SW006_221108	Normal	ES2240971	0.07	9.92	0.64	10.6	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.05	0.07	<0.02	0.24	0.07	0.04	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	11.1	11	
SW007	MD7	8/11/2022	0908_SW007_221108	Normal	ES2240971	0.11	13.9	0.95	14.8	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.08	<0.02	0.33	0.11	0.05	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	15.6	15.5		
SW009	MD8	8/11/2022	0908_SW009_221108	Normal	ES2240971	0.05	2.45	0.58	3.03	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.03	<0.02	0.14	0.05	0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.42	3.31	
SW014	MD14	7/11/2022	0908_SW014_221107	Normal	ES2240971	0.02	1.14	0.26	1.4	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.06	0.03	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.55	1.5	
SW019	TC12	14/11/2022	0908_SW019_221114	Normal	ES2241530	0.02	0.74	0.33	1.07	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.06	0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.22	1.18	
SW023	TC6A	8/11/2022	0908_SW023_221108	Normal	ES2240971	0.02	0.36	0.23	0.59	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.69	0.67	
SW024	TC7	8/11/2022	0908_SW024_221108	Normal	ES2240971	<0.01	0.27	0.12	0.39	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.42	0.42	
SW047	BD03	10/11/2022	0908_SW047_221110	Normal	ES2240971	0.08	3.93	0.74	4.67	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.03	<0.02	0.11	0.06	0.03	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	5.05	4.95	
SW048	BD04	10/11/2022	0908_SW048_221110	Normal	ES2240971	0.05	0.22	0.78	1	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	0.03	<0.02	0.18	0.04	0.03	<0.02	<0.02	<0.02	0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.56	1.39	
SW055	DD1	10/11/2022	0908_SW055_221110	Normal	ES2240971	0.08	3.48	0.8	4.28	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.04	<0.02	0.17	0.07	0.04	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.82	4.67	
SW059	DD2	9/11/2022	0908_SW059_221109	Normal	ES2240971	0.07	1.17	0.88	2.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	0.04	<0.02	0.24	0.08	0.04	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.72	2.52	
SW060	DD3	9/11/2022	0908_SW060_221109	Normal	ES2240971	0.6	16.3	6.9	23.2	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.92	0.3	<0.02	1.8	0.71	0.32	<0.02	<0.02	<0.02	0.56	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	28.6	27	
SW060	DD3	9/11/2022	0908_QC109_221109	Field_D	ES2240971	0.62	16.1	7.12	23.2	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.68	0.38	<0.02	2.14	0.75	0.28	<0.02	<0.02	<0.02	0.61	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	28.9	27.4	
SW060	DD3	9/11/2022	0908_QC209_221109	Interlab_D	310531	0.57	16	6	22	<0.01	<0.01	<0.02	<0.02	<0.1	<0.5	0.72	0.34	<0.01	1.7	0.62	0.25	<0.02	<0.02	<0.02	0.6	0.21	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	27	-	
SW062	DD5	7/11/2022	0908_SW062_221107	Normal	ES2240971	<0.01	0.13	0.08	0.21	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.21	0.21	
SW079	TC2	7/11/2022	0908_SW079_221107	Normal	ES2240971	<0.01	0.35	0.19	0.54	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.66	0.62	
SW081	TFD1	8/11/2022	0908_SW081_221108	Normal	ES2240971	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
SW108	LC	10/11/2022	0908_SW108_221110	Normal	ES2240971	0.1	4.48	1	5.48	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.09	0.05	<0.02	0.21	0.09	0.05	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	6.12	5.94	
SW108	LC	10/11/2022	0908_QC114_221110	Field_D	ES2240971	0.08	4	1.13	5.13	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.06	<0.02	0.22	0.08	0.04	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	5.73	5.58	
SW108	LC	10/11/2022	0908_QC214_221110	Interlab_D	310531	0.08	4.2	0.98	5.2	<0.01	0.01	<0.02	<0.02	<0.1	<0.5	0.07	0.05	<0.01	0.18	0.09	0.04	<0.02	<0.05	<0.02	0.09	<0.02	<0.05	<0.5	<0.1	<0.05	<0.02	<0.1	<0.02	5.8	-	
SW110	LC_B	10/11/2022	0908_SW110_221110	Normal	ES2240971	0.09	5.41	1.08	6.49	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.06	0.05	<0.02	0.22	0.09	0.04	<0														



Table T7 - Sediment Analytical Results

						Per- and Poly-fluoroalkyl Substances																																
						Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOsAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOsAA)	Sum of PFAS	Sum of PFAS (WA DER List)		
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
LOR						0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Location Code	Alt. Name	Date	Field ID	Sample Type	Lab Report #	<0.0002	0.0936	0.0082	0.102	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0006	<0.0002	<0.0002	0.0012	<0.0002	0.0006	<0.0002	0.0012	<0.0002	0.0006	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0013	<0.0002	0.107	0.104		
SD001	MD1	8/11/2022	0908_SD001_221108	Normal	ES2240971	<0.0002	0.0936	0.0082	0.102	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0006	<0.0002	<0.0002	0.0012	<0.0002	0.0006	<0.0002	0.0012	<0.0002	0.0006	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0013	<0.0002	0.107	0.104		
SD005	MD5	8/11/2022	0908_SD005_221108	Normal	ES2240971	0.0011	0.0417	0.0023	0.044	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0012	<0.0002	0.002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0489	0.0489	
SD006	MD6	8/11/2022	0908_SD006_221108	Normal	ES2240971	<0.0002	0.336	0.0034	0.339	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0005	<0.0002	<0.0002	0.0002	<0.0002	0.0002	<0.0002	0.0025	0.0019	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0011	<0.0002	0.346	0.34	
SD007	MD7	8/11/2022	0908_SD007_221108	Normal	ES2240971	<0.0002	0.0088	0.0009	0.0097	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0097	0.0097	
SD009	MD8	8/11/2022	0908_QC207_221108	Interlab_D	310531	<0.0001	0.0059	0.0005	0.0064	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0067	-	
SD009	MD8	8/11/2022	0908_QC107_221108	Field_D	ES2240971	<0.0002	0.0062	0.0008	0.007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.007	0.007	
SD009	MD8	8/11/2022	0908_SD009_221108	Normal	ES2240971	<0.0002	0.0133	0.0013	0.0146	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0005	<0.0002	0.0159	0.0151	
SD014	MD14	7/11/2022	0908_QC204_221107	Interlab_D	310531	<0.0001	0.0096	0.0004	0.01	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.01	-	
SD014	MD14	7/11/2022	0908_QC104_221107	Field_D	ES2240971	<0.0002	0.0255	0.002	0.0275	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0275	0.0275	
SD014	MD14	7/11/2022	0908_SD014_221107	Normal	ES2240971	<0.0002	0.0508	0.002	0.0528	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0011	<0.0002	0.0544	0.0528	
SD019	TC12	14/11/2022	0908_SD019_221114	Normal	ES2241530	0.0008	0.0283	0.0028	0.0311	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0004	<0.0002	0.0013	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0342	0.0339
SD023	TC6A	8/11/2022	0908_SD023_221108	Normal	ES2240971	<0.0002	0.0186	0.0009	0.0195	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0195	0.0195	
SD024	TC7	8/11/2022	0908_SD024_221108	Normal	ES2240971	<0.0002	0.084	0.0059	0.0899	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0902	0.0902	
SD047	BD03	10/11/2022	0908_SD047_221110	Normal	ES2240971	<0.0002	0.0264	0.001	0.0274	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0276	0.0274	
SD048	BD04	10/11/2022	0908_SD048_221110	Normal	ES2240971	0.0006	0.0103	0.004	0.0143	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0002	0.001	<0.0002	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0174	0.0172	
SD055	DD1	10/11/2022	0908_SD055_221110	Normal	ES2240971	0.0003	0.0323	0.0054	0.0377	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	0.0002	<0.0002	0.0005	0.0002	0.0002	0.0002	0.0003	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	0.0009	<0.0002	0.0423	0.0387
SD059	DD2	9/11/2022	0908_SD059_221109	Normal	ES2240971	<0.0002	0.0003	<0.0002	0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0003	0.0003
SD060	DD3	9/11/2022	0908_QC211_221109	Interlab_D	310531	0.0003	0.012	0.0025	0.014	<0.0001	<0.0001	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.016	-	
SD060	DD3	9/11/2022	0908_SD060_221109	Normal	ES2240971	0.0003	0.0149	0.0034	0.0183	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0003	<0.0002	<0.0002	0.0007	0.0004	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0202	0.0195	
SD060	DD3	9/11/2022	0908_QC111_221109	Field_D	ES2240971	0.0004	0.0213	0.0039	0.0252	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	0.0004	<0.0002	<0.0002	0.0009	0.0006	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	0.0277	0.0267	
SD062	DD5	7/11/2022	0908_SD062_221107	Normal	ES2240971	&lt																																





Table T9 - Historical Groundwater Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PFAS NEMP 2020 Drinking Water	0.56			0.07																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
MW106D	10/11/2014	MW106D_10112014	Normal	NSW_0908_PFA	<0.01	0.14	2.1	2.24	-	0.18	-	-	<0.01	-	<0.01	0.49	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	19/01/2016	MW106D_19012016	Normal	NSW_0908_PFA	0.66	<0.01	3.89	3.89	-	0.21	-	-	<0.02	-	-	0.48	0.07	<0.02	<0.02	<0.05	<0.05	<0.05	<0.5	<0.1	<0.1	-	<0.05	<0.05	-	<0.5	<0.05	-	<0.5
MW106D	25/08/2016	MW106D_250816	Normal	NSW_0908_PFA	0.14	0.77	1.2	1.97	-	0.03	-	-	<0.01	<0.05	0.01	0.18	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	17/10/2016	MW106D_171016	Normal	NSW_0908_PFA	0.1	0.36	0.84	1.2	-	0.04	-	-	<0.01	<0.05	0.02	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	19/01/2017	MW106D_190117	Normal	ACTNSW_Hist_202012-3	<0.01	<0.01	<0.01	-	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	19/01/2017	MW106D_1901117	Normal	NSW_0908_PFA	0.13	0.82	0.75	1.57	-	0.03	-	-	<0.01	<0.05	0.01	0.14	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	20/01/2017	MW106D_GW_170120	Normal	NSW_0908_PFA	0.16	0.7	1.8	2.5	3.19	0.05	0.05	0.3	<0.02	<0.1	0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	9/05/2017	MW106D_090517	Normal	ACTNSW_Hist_202012-3	0.22	0.65	1.1	-	-	0.04	0.04	0.37	<0.01	<0.05	0.02	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106D	3/04/2018	MW106D_GW_03042018	Normal	NSW_0908_PFA	0.02	0.1	0.41	0.51	0.58	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	21/11/2018	0908_MW106D_181121	Normal	NSW_0908_PFA	0.05	1.3	0.74	2.04	2.54	0.05	0.04	0.26	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	28/05/2019	0908_MW106D_190528	Normal	NSW_0908_PFA	0.02	0.24	0.34	0.58	0.63	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	4/11/2019	0908_MW106D_191104	Normal	NSW_0908_PFA	0.08	2.22	1.35	3.57	4.28	0.04	0.03	0.45	<0.02	<0.1	<0.02	0.09	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	19/05/2020	0908_MW106D_200519	Normal	NSW_0908_PFA	0.02	0.49	0.31	0.80	0.93	<0.02	<0.02	0.08	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	17/11/2020	0908_MW106_D_201117	Normal	NSW_0908_PFA	0.05	1.93	0.42	2.35	2.80	<0.02	<0.02	0.36	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	14/05/2021	0908_MW106D_210514	Normal	NSW_0908_PFA	0.03	1.23	0.77	2.00	2.60	0.11	0.08	0.09	<0.02	<0.1	0.04	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	8/11/2021	0908_MW106D_211108	Normal	NSW_0908_PFA	0.02	0.22	0.30	0.52	0.60	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	24/05/2022	0908_MW106D_220524	Normal	NSW_0908_PFA	0.14	1.64	2.57	4.21	5.62	0.23	0.24	0.20	<0.02	<0.1	0.07	0.46	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106D	8/11/2022	0908_MW106D_221108	Normal	NSW_0908_PFA	0.03	0.48	0.78	1.26	1.52	0.05	0.05	0.03	<0.02	<0.1	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106S	10/11/2014	MW106S_10112014	Normal	NSW_0908_PFA	<0.01	0.08	0.27	0.35	-	<0.01	-	-	<0.01	-	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	19/01/2016	MW106S_19012016	Normal	NSW_0908_PFA	0.02	0.06	0.27	0.33	-	<0.02	-	-	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106S	25/08/2016	MW106S_250816	Normal	NSW_0908_PFA	<0.01	0.04	0.08	0.12	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	17/10/2016	MW106S_171016	Normal	NSW_0908_PFA	<0.01	0.08	0.17	0.25	-	0.01	-	-	<0.01	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	19/01/2017	MW106S_190117	Normal	ACTNSW_Hist_202012-3	<0.01	<0.01	<0.01	-	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	19/01/2017	MW106S_1901117	Normal	NSW_0908_PFA	<0.01	0.04	0.13	0.17	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	19/01/2017	QC115_190117	Field_D	ACTNSW_Hist_202012-3	<0.01	<0.01	<0.01	-	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW106S	20/01/2017	MW106S_GW_170120	Normal	NSW_0908_PFA	<0.01	0.04	0.67	0.71	0.71	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02																



Table T9 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PF OA)	Perfluorooctane sulfonic acid (PF OS)	Perfluorohexane sulfonic acid (PF HS)	Sum of PF HS and PF OS	Sum of PF AS	Perfluorobutane sulfonic acid (PF BS)	Perfluoropentane sulfonic acid (PF PS)	Perfluoroheptane sulfonic acid (PF HPS)	Perfluorodecane sulfonic acid (PF DS)	Perfluorobutanoic acid (PF BA)	Perfluoropentanoic acid (PF PA)	Perfluorohexanoic acid (PF HA)	Perfluoroheptanoic acid (PF HPA)	Perfluorononanoic acid (PF NA)	Perfluorodecanoic acid (PF DA)	Perfluoroundecanoic acid (PF UDA)	Perfluorododecanoic acid (PF DDA)	Perfluorotridecanoic acid (PF TDA)	Perfluorotetradecanoic acid (PF TeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	PF OA	PF OS	PF HS	Sum of PF HS and PF OS	Sum of PF AS	PF BS	PF PS	PF HPS	PF DS	PF BA	PF PA	PF HA	PF HPA	PF NA	PF DA	PF UDA	PF DDA	PF TDA	PF TeDA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	FOSA	MeFOSA	MeFOSAA	MeFOSE	EFOSA	EFOAAA	EFOSE	
MW108D	10/11/2021	0908_MW108D_211110	Normal	NSW_0908_PFAOMP	<0.01	<0.01	1.41	1.41	2.25	0.21	0.20	<0.02	<0.02	<0.1	0.05	0.33	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW108D	19/05/2022	0908_MW108D_220519	Normal	NSW_0908_PFAOMP	<0.01	<0.01	0.21	0.21	0.26	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108D	10/11/2022	0908_MW108D_221110	Normal	NSW_0908_PFAOMP	<0.01	<0.01	0.36	0.36	0.47	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	17/11/2014	MW108S_17112014	Normal	NSW_0908_PFAOMP	<0.01	0.02	0.21	0.23	-	<0.01	-	-	<0.01	-	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	-	-	<0.05	-	-	
MW108S	21/01/2016	MW108S_21012016	Normal	NSW_0908_PFAOMP	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW108S	29/08/2016	MW108S_290816	Normal	NSW_0908_PFAOMP	0.02	0.13	1.9	2.03	-	0.07	-	-	<0.01	<0.05	0.04	0.46	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	<0.05	-	-
MW108S	17/10/2016	MW108S_171016	Normal	NSW_0908_PFAOMP	0.02	0.2	2.4	2.6	-	0.07	-	-	<0.01	<0.05	0.02	0.12	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	-	-	<0.05	-
MW108S	13/01/2017	MW108S_130117	Normal	ACTNSW_Hist_202012-3	0.02	0.38	0.78	-	-	0.03	-	-	<0.01	<0.05	0.01	0.18	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	-	-	<0.05	-
MW108S	24/01/2017	MW108S_GW_24012017	Normal	NSW_0908_PFAOMP	0.01	0.46	0.99	1.45	1.75	0.03	0.11	<0.02	<0.02	<0.1	<0.02	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	2/05/2017	MW108S_020517	Normal	ACTNSW_Hist_202012-3	0.02	0.11	0.82	-	-	0.02	0.03	<0.01	<0.01	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	<0.05	<0.01	<0.05	
MW108S	4/04/2018	MW108S_GW_04042018	Normal	NSW_0908_PFAOMP	<0.01	0.02	0.25	0.27	0.27	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW108S	9/08/2018	0908_MW108S_180809	Normal	NSW_0908_PFAOMGMT	0.32	0.06	2.97	3.03	4.05	0.07	0.16	<0.02	<0.02	<0.1	0.05	0.38	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	5/09/2018	0908_MW108S_180905	Normal	NSW_0908_PFAOMGMT	0.35	0.09	3.22	3.31	4.35	0.07	0.15	<0.02	<0.02	<0.1	0.03	0.39	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	3/10/2018	0908_MW108S_181003	Normal	NSW_0908_PFAOMGMT	0.57	0.10	5.80	5.90	8.48	0.17	0.25	0.27	<0.02	<0.1	0.15	1.06	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	3/10/2018	0908_QC106_181003	Field_D	NSW_0908_PFAOMGMT	0.58	0.11	5.84	5.95	8.49	0.16	0.24	0.28	<0.02	<0.1	0.16	1.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	3/10/2018	0908_QC206_181003	Interlab_D	NSW_0908_PFAOMGMT	0.48	<0.02	4	-	-	0.13	0.2	0.063	<0.01	0.061	0.12	0.7	0.081	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW108S	29/11/2018	0908_MW108S_181129	Normal	NSW_0908_PFAOMP	0.55	0.07	4.46	4.53	6.52	0.13	0.2	0.27	<0.02	<0.1	0.1	0.67	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	22/01/2019	0908_MW108S_190122	Normal	NSW_0908_PFAOMGMT	0.40	0.08	3.90	3.98	5.19	0.08	0.15	0.17	<0.02	<0.1	0.03	0.32	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	1/04/2019	0908_MW108S_190401	Normal	NSW_0908_PFAOMGMT	0.22	0.16	2.49	2.65	3.33	0.09	0.08	0.10	<0.02	<0.1	0.02	0.14	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	31/05/2019	0908_MW108S_190531	Normal	NSW_0908_PFAOMP	0.07	0.12	0.23	0.35	0.54	0.06	0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	20/06/2019	0908_MW108S_190620	Normal	NSW_0908_PFAOMGMT	0.04	0.09	0.23	0.32	0.62	0.09	0.06	0.03	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	24/09/2019	0908_MW108S_190924	Normal	NSW_0908_PFAOMGMT	0.02	0.06	2.09	2.15	2.65	0.11	0.14	<0.02	<0.02	<0.1	0.03	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	8/11/2019	0908_MW108S_191108	Normal	NSW_0908_PFAOMP	0.03	0.12	3.13	3.25	3.65	0.09	0.10	<0.02	<0.02	<0.1	0.03	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	28/11/2019	0908_MW108S_191128	Normal	NSW_0908_PFAOMP	0.02	0.02	1.62	2.75	2.92	0.05	0.05	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	16/03/2020	0908_MW108S_200316	Normal	NSW_0908_PFAOMGMT	0.01	0.20	0.25	0.45	0.46	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	11/05/2020	0908_MW108S_200511	Normal	NSW_0908_PFAOMP	<0.01	0.27	0.20	0.47	0.47	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	22/06/2020	0908_MW108S_200622	Normal	NSW_0908_PFAOMGMT	<0.01	0.04	0.29	0.33	0.33	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW108S	22/06/2020	0908_QC100_200622	Field_D	NSW_0908_PFAOMGMT	<0.01	0.04	0.29	0.33	0.33	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02							

Table T9 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.002	
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	0.54	15.4	6.54	21.9	26.2	0.55	0.65	0.40	0.03	0.2	0.34	1.29	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW109D	16/11/2021	0908_MW109D_211116	Normal	NSW_0908_PFAASOMP	0.54	15.4	6.54	21.9	26.2	0.55	0.65	0.40	0.03	0.2	0.34	1.29	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW109D	19/05/2022	0908_MW109D_220519	Normal	NSW_0908_PFAASOMP	0.60	30.9	6.48	37.4	40.9	0.22	0.34	0.72	0.07	0.1	0.26	0.92	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW109D	10/11/2022	0908_MW109D_221110	Normal	NSW_0908_PFAASOMP	0.76	26.4	7.94	34.3	38.2	0.33	0.48	0.64	<0.02	0.2	0.27	0.92	0.22	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW118	12/11/2014	MW118_12112014	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW118	29/01/2016	MW118_29012016	Normal	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	
MW118	11/01/2017	MW118_GW_11012017	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	28/03/2018	MW118_GW_28032018	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	19/11/2018	0908_MW118_181118	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	24/05/2019	0908_MW118_190524	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	5/11/2019	0908_MW118_191105	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	5/11/2019	0908_OC101_191105	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	5/11/2019	0908_QC201_191105	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	<0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW118	19/05/2020	0908_MW118_200519	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	23/11/2020	0908_MW118_201123	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	13/05/2021	0908_MW118_210513	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	13/05/2021	0908_QC101_210513	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	13/05/2021	0908_QC201_210513	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	<0.01	-	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW118	9/11/2021	0908_MW118_211109	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	17/05/2022	0908_MW118_220517	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	17/05/2022	0908_QC100_220517	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW118	7/11/2022	0908_MW118_221107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	&lt					





























Table T9 - Historical Groundwater Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PFAS NEMP 2020 Drinking Water	0.56			0.07																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamide (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
MW209D	14/05/2021	0908_MW209D_210514	Normal	NSW_0908_PFAASOMP	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209D	8/11/2021	0908_MW209D_211108	Normal	NSW_0908_PFAASOMP	<0.01	0.12	0.01	0.13	0.29	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.16	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW209D	24/05/2022	0908_MW209D_220524	Normal	NSW_0908_PFAASOMP	<0.01	0.02	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	12/01/2016	MW209S_12012016	Normal	NSW_0908_PFAASOMP	0.01	1.89	-	1.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	
MW209S	25/08/2016	MW209S_250816	Normal	NSW_0908_PFAASOMP	<0.01	1.2	0.06	1.26	-	<0.01	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	-	-	<0.05	-	-	
MW209S	19/10/2016	MW209S_191016	Normal	NSW_0908_PFAASOMP	<0.01	1.3	0.06	1.36	-	<0.01	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	-	-	<0.05	-	
MW209S	13/01/2017	MW209S_130117	Normal	ACTNSW_Hist_202012-3	<0.01	1.2	0.07	-	<0.01	-	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	<0.05	-	-	<0.05	-	
MW209S	17/01/2017	MW209S_GW_170117	Normal	NSW_0908_PFAASOMP	0.02	1.48	0.21	1.69	1.71	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	3/05/2017	MW209S_030517	Normal	ACTNSW_Hist_202012-3	0.02	1.1	0.21	-	<0.01	<0.01	0.03	<0.01	<0.05	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<2	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW209S	3/04/2018	MW209S_GW_03042018	Normal	NSW_0908_PFAASOMP	0.01	2.67	0.23	2.9	3	<0.02	0.02	0.02	<0.02	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	28/06/2018	0908_MW209S_180628	Normal	NSW_0908_Stage2	<0.01	2.67	0.15	2.82	2.85	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	21/11/2018	0908_MW209S_181121	Normal	NSW_0908_PFAASOMP	0.01	1.14	0.25	1.39	1.45	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	28/05/2019	0908_MW209S_190528	Normal	NSW_0908_PFAASOMP	0.02	2.38	0.32	2.7	2.77	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	28/05/2019	0908_OC103_190528	Field_D	NSW_0908_PFAASOMP	0.02	2.76	0.31	3.07	3.15	<0.02	<0.02	0.04	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	28/05/2019	0908_OC203_190528	Interlab_D	NSW_0908_PFAASOMP	0.018	1.4	0.34	1.74	-	<0.01	0.01	0.03	<0.01	<0.05	<0.02	0.026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW209S	6/11/2019	0908_MW209S_191106	Normal	NSW_0908_PFAASOMP	0.01	2.95	0.21	3.16	3.28	<0.02	<0.02	0.02	<0.02	<0.1	0.03	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	12/05/2020	0908_MW209S_200512	Normal	NSW_0908_PFAASOMP	<0.01	2.43	0.04	2.47	2.47	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	17/11/2020	0908_MW209_S_201117	Normal	NSW_0908_PFAASOMP	<0.01	1.90	0.18	2.08	2.12	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	14/05/2021	0908_MW209S_210514	Normal	NSW_0908_PFAASOMP	0.06	2.76	2.01	4.77	5.31	0.05	0.10	0.08	<0.02	<0.1	0.02	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	14/05/2021	0908_OC103_210514	Field_D	NSW_0908_PFAASOMP	0.06	2.72	1.99	4.71	5.27	0.05	0.10	0.08	<0.02	<0.1	0.02	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	14/05/2021	0908_OC203_210514	Interlab_D	NSW_0908_PFAASOMP	0.045	2.2	1.6	-	0.044	0.087	0.054	<0.01	<0.05	0.027	0.17	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW209S	8/11/2021	0908_MW209S_211108	Normal	NSW_0908_PFAASOMP	0.01	2.20	0.14	2.34	2.35	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW209S	24/05/2022	0908_MW209S_220524	Normal	NSW_0908_PFAASOMP	<0.01	0.58	0.05	0.63	0.65	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	21/01/2016	MW212_21012016	Normal	NSW_0908_PFAASOMP	<0.01	0.42	-	0.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW212	26/08/2016	MW212_260816	Normal	NSW_0908_PFAASOMP	0.02	1.5	0.2	1.7	-	<0.01	-	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	
MW212	18/10/2016	MW212_181016	Normal	NSW_0908_PFAASOMP	0.02	1.7	0.21	1.91	-	<0.01	-	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	
MW212	13/01/2017	MW212_GW_13012017	Normal	NSW_0908_PFAASOMP	0.03	3.75	0.16	3.91	3.94	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	16/01/2017	MW212_160117	Normal	ACTNSW_Hist_202012-3	0.03	3.4	0.33	-	0.01	-	-	<0.01	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW212	16/01/2017	MW212_160117	Normal	NSW_0908_PFAASOMP	0.03	3.4	0.33	3.73	-																									





Table T9 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOCAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.002	
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOCAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)	
MW238D	14/11/2022	0908_MW238D_221114	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	17/02/2017	MW238S_GW_17022017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	28/11/2018	0908_MW238S_181128	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	6/06/2019	0908_MW238S_190606	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	8/11/2019	0908_MW238S_191108	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	27/05/2020	0908_MW238S_200527	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	13/11/2020	0908_MW238_S_201113	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	10/05/2021	0908_MW238S_210510	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	11/11/2021	0908_MW238S_211111	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	16/05/2022	0908_MW238S_220516	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW238S	14/11/2022	0908_MW238S_221114	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	20/03/2017	MW240D_GW_200317	Normal	NSW_0908_PFAS	<0.01	0.02	0.14	0.16	0.18	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	19/04/2018	MW240D_GW_19042018	Normal	NSW_0908_PFAS	<0.01	<0.01	0.18	0.18	0.3	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	19/04/2018	MW240D_GW_19042018	Normal	NSW_0908_PFAS	-	-	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW240D	19/04/2018	QC104_GW_19042018	Field_D	NSW_0908_PFAS	<0.01	<0.01	0.18	0.18	0.31	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	19/04/2018	QC104_GW_19042018	Field_D	NSW_0908_PFAS	-	-	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW240D	19/04/2018	QC204_GW_19042018	Interlab_D	NSW_0908_PFAS	<0.01	<0.02	0.1	0.12	-	0.023	0.022	<0.01	<0.01	<0.05	<0.02	0.035	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW240D	22/11/2018	0908_MW240D_181122	Normal	NSW_0908_PFAS	0.02	<0.01	0.28	0.28	0.48	0.04	0.06	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	22/11/2018	0908_MW240D_181122	Normal	NSW_0908_PFAS	-	-	-	0.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW240D	23/01/2019	0908_MW240D_190123	Normal	NSW_0908_PFASMGMT	0.03	<0.01	0.45	0.45	0.74	0.08	0.07	<0.02	<0.02	<0.1	<0.02	0.08	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	31/05/2019	0908_MW240D_190531	Normal	NSW_0908_PFAS	0.06	0.02	0.51	0.53	0.78	0.04	0.06	<0.02	<0.02	<0.1	<0.02	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	23/10/2019	0908_MW240D_191023	Normal	NSW_0908_PFASMGMT	0.09	0.09	0.55	0.64	0.99	0.05	0.06	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW240D	6/11/2019	0908_MW240D_191107	Normal	NSW_0908_PFASOMP	0.07	0.02	0.49	0.51	0.71	0.04	0.05	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02
MW240D	15/05/2020	0908_MW240D_200515	Normal	NSW_0908_PFASOMP	0.07	0.05	0.51	0.56																											

















Table T9 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)		
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.005	0.005	
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamideethanol (EFOSE)	
MW318S	31/05/2022	0908_MW318S_220531	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW318S	8/11/2022	0908_MW318S_221108	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW433	18/11/2014	W33_18112014	Normal	NSW_0908_PFAAS	<0.01	0.15	0.08	0.23	-	<0.01	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	18/11/2014	QC109_GW_18112014	Field_D	NSW_0908_PFAAS	0.01	0.13	0.03	0.16	-	<0.01	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	24/08/2016	W33_240816	Normal	NSW_0908_PFAAS	<0.01	0.02	0.02	0.04	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	17/10/2016	W33_171016	Normal	NSW_0908_PFAAS	<0.01	0.06	0.05	0.11	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	12/01/2017	W33_GW_12012017	Normal	NSW_0908_PFAAS	<0.01	0.04	<0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	13/01/2017	W33_130117	Normal	ACTNSW_Hist_202012-3	<0.01	0.04	0.04	-	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	3/05/2017	W33_030517	Normal	ACTNSW_Hist_202012-3	<0.01	0.07	0.05	-	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW433	3/04/2018	W33_GW_03042018	Normal	NSW_0908_PFAAS	<0.01	0.03	0.04	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	28/06/2018	0908_W33_180628	Normal	NSW_0908_Stage2	<0.01	0.02	0.09	0.11	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	21/11/2018	0908_W33_181121	Normal	NSW_0908_PFAAS	0.02	0.05	0.11	0.16	0.18	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	27/05/2019	0908_W33_190527	Normal	NSW_0908_PFAAS	0.02	0.1	0.18	0.28	0.3	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	6/11/2019	0908_MW433_191106	Normal	NSW_0908_PFAASOMP	0.01	0.05	0.16	0.21	0.22	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	12/05/2020	0908_MW433_200512	Normal	NSW_0908_PFAASOMP	<0.01	0.03	0.09	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	17/11/2020	0908_MW433_201117	Normal	NSW_0908_PFAASOMP	<0.01	0.02	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	17/05/2021	0908_MW433_210517	Normal	NSW_0908_PFAASOMP	0.01	0.16	0.10	0.26	0.27	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	8/11/2021	0908_MW433_211108	Normal	NSW_0908_PFAASOMP	<0.01	0.05	0.05	0.10	0.10	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	24/05/2022	0908_MW433_220524	Normal	NSW_0908_PFAASOMP	0.02	0.06	0.03	0.09	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW433	8/11/2022	0908_MW433_221108	Normal	NSW_0908_PFAASOMP	<0.01	0.02	0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW466	18/06/2014	W66	Normal	ACTNSW_Hist_202012-3	1.4	29.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	
MW466	11/08/2014	W66_11082014	Normal	NSW_0908_PFAAS	0.69	<0.01	0.03	13.03	-	3.9	-	-	<0.01	-	0.61	6.7	0.03	0.03	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW466	11/08/2014	W66_11082014	Normal	NSW_0908_PFAAS	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW466	29/08/2016	W66_290816	Normal	NSW_0908_PFAAS	0.77	26	7.3	33.3	-	0.57	-	-	<0.01	0.1	0.3	1.9	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW466	29/08/2016	QC104_2908016	Field_D	ACTNSW_Hist_202012-3	1.33	31.8	10.5	42.3	51.9																										

Table T9 - Historical Groundwater Analytical Results

LOR	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.002	0.005
0.56			0.07																											
PFAS NEMP 2020 Drinking Water	19	0.00023																												
PFAS NEMP 2020 Freshwater 99%																														

Location Code	Date	Field ID	Sample Type	Project ID	0.17	11.8	2.05	13.8	15.2	0.10	0.14	0.15	0.06	<0.1	0.14	0.41	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW466	20/06/2022	0908_MW466_220620	Normal	NSW_0908_PFAASMGMT	0.17	11.8	2.05	13.8	15.2	0.10	0.14	0.15	0.06	<0.1	0.14	0.41	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW466	12/09/2022	0908_MW466_220912	Normal	NSW_0908_PFAASMGMT	0.30	18.8	3.33	22.1	24.2	0.14	0.20	0.28	0.04	0.1	0.21	0.62	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW466	10/11/2022	0908_MW466_221110	Normal	NSW_0908_PFAASOMP	0.63	19.1	5.72	24.8	28.1	0.17	0.30	0.76	0.07	0.1	0.18	0.75	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW468	17/11/2014	MW68_17112014	Normal	NSW_0908_PFAAS	0.71	47	6.6	53.6	-	0.68	-	-	0.05	-	0.14	1.6	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW468	2/02/2016	W68_02022016	Normal	NSW_0908_PFAAS	0.55	22.8	-	22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	
MW468	30/08/2016	W68_300816	Normal	NSW_0908_PFAAS	0.79	37	9.8	46.8	-	0.89	-	-	<0.01	0.05	0.21	2.7	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW468	19/10/2016	W68_191016	Normal	NSW_0908_PFAAS	0.42	28	5.6	33.6	-	0.43	-	-	<0.01	0.22	0.2	1.5	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW468	12/01/2017	W68_120117	Normal	ACTNSW_Hist_202012-3	0.37	45	3.8	-	-	0.27	-	-	<0.01	0.12	0.17	1.1	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW468	24/01/2017	W68_24012017	Normal	NSW_0908_PFAAS	0.65	54.4	7.09	61.49	66	0.42	0.57	0.47	<0.02	<0.1	0.38	1.7	0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	24/01/2017	W68_24012017	Normal	NSW_0908_PFAAS	-	-	-	61.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW468	2/05/2017	W68_020517	Normal	ACTNSW_Hist_202012-3	0.48	29	6.2	-	-	<0.3	0.51	0.51	<0.3	<0.3	0.35	1.2	0.23	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
MW468	20/04/2018	W68_GW_20042018	Normal	NSW_0908_PFAAS	0.21	27.8	2.42	30.2	32.3	0.27	0.32	0.24	0.04	<0.1	0.2	0.74	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	20/04/2018	W68_GW_20042018	Normal	NSW_0908_PFAAS	-	-	-	30.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW468	22/08/2018	0908_W68_180822	Normal	NSW_0908_PFAASMGMT	0.27	14.9	4.66	19.6	22.2	0.22	0.35	0.24	<0.02	0.1	0.28	0.99	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	14/09/2018	0908_W68_180914	Normal	NSW_0908_PFAASMGMT	0.23	12.8	3.07	15.9	18.5	0.23	0.28	0.24	<0.02	<0.1	0.27	1.20	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	29/11/2018	0908_W68_181129	Normal	NSW_0908_PFAAS	0.26	15.7	3.69	19.4	21.6	0.31	0.35	0.21	<0.02	<0.1	0.19	0.8	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	29/11/2018	0908_W68_181129	Normal	NSW_0908_PFAAS	-	-	-	19.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW468	23/04/2019	0908_W68_190423	Normal	NSW_0908_PFAASMGMT	0.24	12.5	3.73	16.2	18.5	0.32	0.39	0.26	<0.02	<0.1	0.16	0.77	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	22/05/2019	0908_W68_190522	Normal	NSW_0908_PFAASMGMT	0.13	8.23	1.48	9.71	10.8	0.06	0.12	0.11	0.03	<0.1	0.17	0.33	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	31/05/2019	0908_W68_190531	Normal	NSW_0908_PFAAS	0.11	7.49	1.09	8.58	9.54	0.06	0.09	0.08	0.03	<0.1	0.2	0.31	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	19/06/2019	0908_W68_190619	Normal	NSW_0908_PFAASMGMT	0.08	5.99	0.83	6.82	7.55	0.03	0.07	0.06	<0.02	<0.1	0.13	0.32	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	24/09/2019	0908_W68_190924	Normal	NSW_0908_PFAASMGMT	0.22	8.58	2.83	11.4	13.7	0.21	0.28	0.15	<0.02	<0.1	0.32	0.91	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	8/11/2019	0908_MW468_191108	Normal	NSW_0908_PFAASOMP	0.20	13.2	3.48	16.7	18.8	0.23	0.27	0.17	<0.02	0.1	0.24	0.72	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	3/12/2019	0908_W68_191203	Normal	NSW_0908_PFAAS	0.05	3.43	0.56	3.99	4.88	0.06	0.06	0.04	0.02	<0.1	0.22	0.39	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
MW468	16/03/2																																				















Table T10 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Recreational Water	10																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023		2																										

Location Code	Date	Field ID	Sample Type	Project ID	0.26	19.9	2.13	22.0	23.6	0.08	0.11	0.21	<0.02	<0.1	0.25	0.54	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW007	20/11/2020	0908_SW007_201120	Normal	NSW_0908_PFAOAMP	0.26	19.9	2.13	22.0	23.6	0.08	0.11	0.21	<0.02	<0.1	0.25	0.54	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	18/12/2020	0908_SW007_201218	Normal	NSW_0908_PFAOAMP	0.06	5.06	0.44	5.50	5.81	<0.02	0.02	0.04	<0.02	<0.1	0.05	0.12	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012211650	Normal	NSW_0908_PFAOAMP	0.04	4.62	0.25	4.87	5.12	0.03	<0.02	0.03	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012211750	Normal	NSW_0908_PFAOAMP	0.04	4.10	0.25	4.35	4.60	<0.02	<0.02	0.03	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012211850	Normal	NSW_0908_PFAOAMP	0.04	3.73	0.27	4.00	4.23	<0.02	<0.02	0.03	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012211950	Normal	NSW_0908_PFAOAMP	0.02	1.96	0.12	2.08	2.29	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.15	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012212050	Normal	NSW_0908_PFAOAMP	0.01	1.43	0.10	1.53	1.75	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.17	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012212150	Normal	NSW_0908_PFAOAMP	0.01	1.43	0.10	1.53	1.75	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.18	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012212250	Normal	NSW_0908_PFAOAMP	0.02	1.70	0.14	1.84	2.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.16	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	21/12/2020	0908_SW007_2012212350	Normal	NSW_0908_PFAOAMP	0.02	2.09	0.20	2.29	2.57	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.18	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220050	Normal	NSW_0908_PFAOAMP	0.03	2.62	0.23	2.85	3.16	<0.02	<0.02	0.02	<0.02	<0.1	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.16	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220150	Normal	NSW_0908_PFAOAMP	0.02	2.24	0.21	2.45	2.69	<0.02	<0.02	0.02	<0.02	<0.1	0.03	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220250	Normal	NSW_0908_PFAOAMP	0.02	1.90	0.16	2.06	2.23	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220350	Normal	NSW_0908_PFAOAMP	0.02	1.65	0.12	1.77	1.83	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220450	Normal	NSW_0908_PFAOAMP	0.01	1.28	0.10	1.38	1.42	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220550	Normal	NSW_0908_PFAOAMP	0.01	1.22	0.10	1.32	1.36	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220650	Normal	NSW_0908_PFAOAMP	0.01	1.43	0.13	1.56	1.61	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220750	Normal	NSW_0908_PFAOAMP	0.02	1.74	0.16	1.90	2.05	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220850	Normal	NSW_0908_PFAOAMP	0.02	2.37	0.23	2.60	2.78	<0.02	<0.02	0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012220950	Normal	NSW_0908_PFAOAMP	0.03	2.74	0.26	3.00	3.24	<0.02	<0.02	0.03	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012221050	Normal	NSW_0908_PFAOAMP	0.04	2.94	0.32	3.26	3.54	<0.02	<0.02	0.03	<0.02	<0.1	0.04	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012221150	Normal	NSW_0908_PFAOAMP	0.04	3.37	0.36	3.73	4.08	<0.02	0.02	0.04	<0.02	<0.1	0.04	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012221250	Normal	NSW_0908_PFAOAMP	0.05	3.66	0.42	4.08	4.47	<0.02	0.03	0.04	<0.02	<0.1	0.05	0.12	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	22/12/2020	0908_SW007_2012221350	Normal	NSW_0908_PFAOAMP	0.06	4.76	0.53	5.29	5.77	0.02	0.03	0.05	<0.02	<0.1	0.06	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	29/01/2021	0908_SW007_210129	Normal	NSW_0908_PFAOAMP	0.10	7.30	0.86	8.16	8.73	0.03	0.05	0.07	<0.02	<0.1	0.09	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	29/01/2021	0908_SW007_2101291400	Normal	NSW_0908_PFAOAMP	0.13	9.76	1.35	11.1	12.0	0.05	0.08	0.14	<0.02	<0.1	0.10	0.30	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	29/01/2021	0908_SW007_2101291500	Normal	NSW_0908_PFAOAMP	0.12	9.88	1.22</																												

Table T10 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Recreational Water	10																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	0.13	11.9	1.09	13.0	13.9	0.04	0.06	0.10	<0.02	<0.1	0.20	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW007	20/08/2021	0908_SW007_210820	Normal	NSW_0908_PFAASOMP	0.13	11.9	1.09	13.0	13.9	0.04	0.06	0.10	<0.02	<0.1	0.20	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	27/09/2021	0908_SW007_210927	Normal	NSW_0908_PFAASOMP	0.06	6.82	0.58	7.40	7.75	0.02	0.03	0.04	<0.02	<0.1	0.04	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	27/09/2021	0908_OC100_210927	Field_D	NSW_0908_PFAASOMP	0.06	6.71	0.55	7.26	7.62	<0.02	0.03	0.05	<0.02	<0.1	0.04	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	27/09/2021	0908_OC200_210927	Interlab_D	NSW_0908_PFAASOMP	0.057	6.1	0.55	-	-	0.019	0.029	0.04	<0.01	<0.05	0.048	0.13	0.025	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01
SW007	25/10/2021	0908_SW007_211025	Normal	NSW_0908_PFAASOMP	0.07	12.4	0.63	13.0	13.5	0.02	0.04	0.06	<0.02	<0.1	0.07	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	25/10/2021	0908_OC100_211025	Field_D	NSW_0908_PFAASOMP	0.07	11.7	0.59	12.3	12.7	0.02	0.04	0.06	<0.02	<0.1	0.06	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	25/10/2021	0908_OC200_211025	Interlab_D	NSW_0908_PFAASOMP	0.09	15	0.67	16	16	0.02	0.04	0.09	<0.02	0.07	0.18	0.04	0.01	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	0.02	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW007	16/11/2021	0908_SW007_211116	Normal	NSW_0908_PFAASOMP	0.16	12.8	1.54	14.3	15.5	0.08	0.09	0.12	<0.02	<0.1	0.13	0.48	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	16/11/2021	0908_OC116_211116	Field_D	NSW_0908_PFAASOMP	0.16	10.5	1.35	11.8	12.9	0.07	0.08	0.10	<0.02	<0.1	0.12	0.42	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	18/05/2022	0908_SW007_220518	Normal	NSW_0908_PFAASOMP	0.11	11.2	1.00	12.2	13.0	0.04	0.06	0.11	<0.02	<0.1	0.09	0.28	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW007	13/07/2022	0908_SW007_220713	Normal	NSW_0908_PFAASOMP	0.07	6.32	0.65	6.97	7.55	0.04	0.05	0.04	<0.02	<0.1	0.06	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.12	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	12/08/2022	0908_SW007_220812	Normal	NSW_0908_PFAASOMP	0.06	7.43	0.80	8.23	8.74	0.05	0.06	0.05	<0.02	<0.1	0.06	0.19	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	12/08/2022	0908_OC101_220812	Field_D	NSW_0908_PFAASOMP	0.07	7.24	0.85	8.09	8.60	0.04	0.06	0.06	<0.02	<0.1	0.06	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW007	8/11/2022	0908_SW007_221108	Normal	NSW_0908_PFAASOMP	0.11	13.9	0.95	14.8	15.6	0.04	0.07	0.11	<0.02	<0.1	0.08	0.33	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	28/01/2016	MD8_SW_28012016	Normal	NSW_0908_PFAASOMP	0.06	2.2	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-
SW009	14/12/2016	MD8_SW_20161214	Normal	NSW_0908_PFAASOMP	0.11	3.84	2.1	5.94	6.82	0.13	0.14	0.2	<0.02	<0.1	0.04	0.2	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	23/03/2017	MD8_SW_230317	Normal	NSW_0908_PFAASOMP	0.02	0.91	0.18	1.09	1.17	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	1/05/2018	MD8_SW_01052018	Normal	NSW_0908_PFAASOMP	0.05	1.26	0.56	1.82	2.2	0.05	0.06	0.04	<0.02	<0.1	0.03	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	7/12/2018	0908_MD8_SW_181207	Normal	NSW_0908_PFAASOMP	0.07	2.2	1.01	3.21	3.84	0.1	0.1	0.1	<0.02	<0.1	0.04	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	13/06/2019	0908_MD8_SW_190613	Normal	NSW_0908_PFAASOMP	0.03	0.69	0.66	1.35	1.68	0.07	0.09	<0.02	<0.02	<0.1	<0.02	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	6/11/2019	0908_MD8_SW_191106	Normal	NSW_0908_PFAASOMP	0.05	2.68	0.62	3.30	4.00	0.05	0.07	0.04	<0.02	<0.1	0.08	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.15	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	24/06/2020	0908_SW009_200624	Normal	NSW_0908_PFAASOMP	0.08	2.22	1.20	3.42	4.19	0.12	0.12	0.12	<0.02	<0.1	0.06	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	4/12/2020	0908_SW009_201204	Normal	NSW_0908_PFAASOMP	0.07	4.09	0.93	5.02	5.60	0.06	0.09	0.09	<0.02	<0.1	0.04	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	11/05/2021	0908_SW009_210511	Normal	NSW_0908_PFAASOMP	0.08	4.72	1.05	5.77	6.43	0.08	0.08	0.07	<0.02	<0.1	0.08	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	17/11/2021	0908_SW009_211117	Normal	NSW_0908_PFAASOMP	0.06	2.23	0.79	3.02	3.50	0.06	0.06	0.08	<0.02	<0.1	0.03	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	17/05/2022	0908_SW009_220517	Normal	NSW_0908_PFAASOMP	0.08	7.95	0.82	8.77	9.36	0.04	0.06	0.08	<0.02	<0.1	0.07	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW009	8/11/2022	0908_SW009_221108	Normal	NSW_0908_PFAASOMP	0.05	2.45	0.58	3.03	3.42	0.04	0.06	0.05	<0.02	<0.1	0.03	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	12/02/2016	MD10_SW_12022016	Normal	NSW_0908_PFAASOMP																															

Table T10 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.005	0.002	0.005
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Recreational Water	10																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023		2																										

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
SW019	9/02/2017	TC12_SW_090217	Normal	NSW_0908_PFAS	<0.01	0.27	0.17	0.44	0.46	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	16/02/2017	TC12_SW_16022017	Normal	NSW_0908_PFAS	<0.01	0.02	0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	24/02/2017	TC12_SW_240217	Normal	NSW_0908_PFAS	<0.01	0.17	0.05	0.22	0.24	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	2/03/2017	TC12_SW_020317	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	9/03/2017	TC12_SW_090317	Normal	NSW_0908_PFAS	<0.01	0.03	0.03	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	16/03/2017	TC12_SW_20170316	Normal	NSW_0908_PFAS	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	23/03/2017	TC12_SW_230317	Normal	NSW_0908_PFAS	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	30/03/2017	TC12_SW_300317	Normal	NSW_0908_PFAS	<0.01	0.03	0.04	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	6/04/2017	TC12_SW_060417	Normal	NSW_0908_PFAS	0.02	0.27	0.42	0.69	0.81	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	4/05/2017	TC12_SW_040517	Normal	NSW_0908_PFAS	<0.01	0.07	0.17	0.24	-	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	1/06/2017	TC12_SW_010617	Normal	NSW_0908_PFAS	<0.01	0.03	0.07	0.1	0.1	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	20/07/2017	TC12_SW_200717	Normal	NSW_0908_PFAS	<0.01	0.09	0.3	0.39	0.49	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	12/04/2018	TC12_SW_12042018	Normal	NSW_0908_PFAS	<0.01	0.01	0.02	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	6/12/2018	0908_TC12_SW_181206	Normal	NSW_0908_PFAS	<0.01	0.04	0.07	0.11	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	14/06/2019	0908_TC12_SW_190614	Normal	NSW_0908_PFAS	<0.01	0.07	0.03	0.1	0.1	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	7/11/2019	0908_TC12_SW_191107	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.09	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	26/05/2020	0908_SW019_200526	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.03	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	12/11/2020	0908_SW019_201112	Normal	NSW_0908_PFASOMP	<0.01	0.29	0.35	0.64	0.78	0.03	0.03	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	10/05/2021	0908_SW019_210510	Normal	NSW_0908_PFASOMP	0.03	0.81	0.62	1.43	1.73	0.04	0.05	0.04	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	12/11/2021	0908_SW019_211112	Normal	NSW_0908_PFASOMP	<0.01	0.06	0.03	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	27/05/2022	0908_SW019_220527	Normal	NSW_0908_PFASOMP	0.02	0.33	0.30	0.63	0.75	0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW019	14/11/2022	0908_SW019_221114	Normal	NSW_0908_PFASOMP	0.02	0.74	0.33	1.07	1.22	0.03	0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW023	6/12/2018	0908_TC6a_SW_181206	Normal	NSW_0908_PFAS	<0.01	0.04	0.05	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW023	5/11/2019	0908_TC6a_SW_191105	Normal	NSW_0908_PFASOMP	<0.05	<0.05	0.06	0.06	0.06	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05
SW023	4/06/2020	0908_SW023_200604	Normal	NSW_0908_PFASOMP	<0.01	0.08	0.19	0.27	0.36	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW023	20/11/2020	0908_SW023_201120	Normal	NSW_0908_PFASOMP	0.02	0.50	0.60	1.10	1.36	0.06	0.05	0.03	<0.02	<0.1	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<													















Table T10 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluorooheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)		
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
PFAS NEMP 2020 Drinking Water	0.56			0.07																												
PFAS NEMP 2020 Recreational Water	10			2																												
PFAS NEMP 2020 Freshwater 99%	19	0.00023																														

Location Code	Date	Field ID	Sample Type	Project ID	0.06	1.12	1.47	2.59	3.29	0.11	0.15	0.06	<0.02	<0.1	0.04	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	29/01/2021	0908_SW059_2101290030	Normal	NSW_0908_PFAOSMP	0.06	1.12	1.47	2.59	3.29	0.11	0.15	0.06	<0.02	<0.1	0.04	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290130	Normal	NSW_0908_PFAOSMP	0.07	1.24	1.60	2.84	3.65	0.12	0.17	0.07	<0.02	<0.1	0.05	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290230	Normal	NSW_0908_PFAOSMP	0.06	1.13	1.48	2.61	3.34	0.11	0.16	0.07	<0.02	<0.1	0.04	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290330	Normal	NSW_0908_PFAOSMP	0.08	1.27	1.80	3.07	3.96	0.13	0.19	0.08	<0.02	<0.1	0.05	0.32	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290430	Normal	NSW_0908_PFAOSMP	0.08	1.23	1.82	3.05	3.97	0.14	0.18	0.08	<0.02	<0.1	0.06	0.34	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290530	Normal	NSW_0908_PFAOSMP	0.09	1.44	2.11	3.55	4.64	0.18	0.22	0.09	<0.02	<0.1	0.06	0.40	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290630	Normal	NSW_0908_PFAOSMP	0.10	1.44	2.37	3.81	5.09	0.21	0.25	0.10	<0.02	<0.1	0.08	0.48	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290730	Normal	NSW_0908_PFAOSMP	0.12	1.37	2.91	4.28	5.74	0.24	0.31	0.10	<0.02	<0.1	0.09	0.53	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290830	Normal	NSW_0908_PFAOSMP	0.12	1.42	2.71	4.13	5.58	0.24	0.29	0.11	<0.02	<0.1	0.09	0.53	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101290930	Normal	NSW_0908_PFAOSMP	0.13	1.52	2.94	4.46	6.10	0.26	0.30	0.13	<0.02	<0.1	0.09	0.56	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291030	Normal	NSW_0908_PFAOSMP	0.14	1.57	3.04	4.61	6.23	0.27	0.32	0.14	<0.02	<0.1	0.09	0.58	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291130	Normal	NSW_0908_PFAOSMP	0.14	1.48	2.94	4.42	6.03	0.24	0.30	0.13	<0.02	<0.1	0.09	0.54	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291230	Normal	NSW_0908_PFAOSMP	0.13	1.48	2.98	4.46	6.08	0.25	0.30	0.13	<0.02	<0.1	0.09	0.55	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291330	Normal	NSW_0908_PFAOSMP	0.13	1.53	2.76	4.29	5.85	0.22	0.28	0.12	<0.02	<0.1	0.13	0.51	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291430	Normal	NSW_0908_PFAOSMP	0.13	1.76	2.83	4.59	6.05	0.22	0.28	0.14	<0.02	<0.1	0.10	0.52	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	29/01/2021	0908_SW059_2101291530	Normal	NSW_0908_PFAOSMP	0.13	1.68	2.83	4.51	6.08	0.23	0.29	0.13	<0.02	<0.1	0.10	0.52	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	19/02/2021	0908_SW059_210219	Normal	NSW_0908_PFAOSMP	0.10	2.51	1.92	4.43	5.53	0.14	0.16	0.10	<0.02	<0.1	0.10	0.45	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	26/03/2021	0908_SW059_210326	Normal	NSW_0908_PFAOSMP	0.04	0.68	0.63	1.31	1.68	0.05	0.05	0.04	<0.02	<0.1	0.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	27/04/2021	0908_SW059_210427	Normal	NSW_0908_PFAOSMP	0.06	1.26	0.94	2.20	2.74	0.07	0.08	0.05	<0.02	<0.1	0.04	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	11/05/2021	0908_SW059_210511	Normal	NSW_0908_PFAOSMP	0.06	1.28	0.94	2.22	2.73	0.06	0.08	0.06	<0.02	<0.1	0.04	0.18	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	25/06/2021	0908_SW059_210625	Normal	NSW_0908_PFAOSMP	0.07	1.08	1.29	2.37	3.03	0.09	0.12	0.07	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	30/07/2021	0908_SW059_210730	Normal	NSW_0908_PFAOSMP	0.06	1.02	1.03	2.05	2.66	0.09	0.09	0.06	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	20/08/2021	0908_SW059_210820	Normal	NSW_0908_PFAOSMP	0.13	1.76	2.14	3.90	5.24	0.20	0.24	0.14	<0.02	<0.1	0.10	0.47	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	20/08/2021	0908_OC100_210820	Field_D	NSW_0908_PFAOSMP	0.12	1.69	1.81	3.50	4.69	0.17	0.21	0.12	<0.02	<0.1	0.09	0.43	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	20/08/2021	0908_OC200_210820	Interlab_D	NSW_0908_PFAOSMP	0.047	0.51	0.96	-	-	0.087	0.098	0.028	<0.01	<0.05	0.044	0.17	0.028	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05
SW059	27/09/2021	0908_SW059_210927	Normal	NSW_0908_PFAOSMP	0.06	0.88	1.07	1.95	2.58	0.10	0.10	0.06	<0.02	<0.1	0.04	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	25/10/2021	0908_SW059_211025	Normal	NSW_0908_PFAOSMP	0.16	2.32	1.78	4.10	5.49	0.18	0.22	0.14	<0.02	<0.1	0.10	0.52																			



Table T10 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.005	0.002	0.005	0.002	0.005	0.002
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Recreational Water	10																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	0.12	4.26	1.58	5.84	6.84	0.11	0.14	0.14	<0.02	<0.1	0.08	0.36	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW060	26/03/2021	0908_SW060_210326	Normal	NSW_0908_PFASOMP	0.12	4.26	1.58	5.84	6.84	0.11	0.14	0.14	<0.02	<0.1	0.08	0.36	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	26/03/2021	0908_OC100_210326	Field_D	NSW_0908_PFASOMP	0.12	4.28	1.58	5.86	6.86	0.12	0.14	0.14	<0.02	<0.1	0.08	0.35	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	26/03/2021	0908_OC200_210326	Interlab_D	NSW_0908_PFASOMP	0.086	2.8	1.4	-	-	0.1	0.12	0.093	<0.01	0.063	0.067	0.26	0.039	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05		
SW060	23/04/2021	0908_SW060_210423	Normal	NSW_0908_PFASOMP	0.62	12.0	8.75	20.8	26.6	0.64	0.98	0.64	<0.02	0.3	0.39	2.03	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	11/05/2021	0908_SW060_210511	Normal	NSW_0908_PFASOMP	0.59	10.7	6.08	16.8	21.6	0.53	0.68	0.62	<0.02	0.2	0.31	1.64	0.25	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	25/06/2021	0908_SW060_210625	Normal	NSW_0908_PFASOMP	0.79	14.9	8.06	23.0	29.0	0.63	0.96	0.78	<0.02	0.2	0.40	2.00	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	30/07/2021	0908_SW060_210730	Normal	NSW_0908_PFASOMP	0.69	15.3	6.94	22.2	27.6	0.58	0.64	0.69	<0.02	0.2	0.33	1.91	0.27	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	20/08/2021	0908_SW060_210820	Normal	NSW_0908_PFASOMP	0.81	10.5	4.21	14.7	21.7	0.72	1.10	0.87	<0.02	0.3	0.47	2.43	0.33	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	27/09/2021	0908_SW060_210927	Normal	NSW_0908_PFASOMP	0.66	13.0	8.29	21.3	28.5	0.86	1.14	0.85	<0.02	<0.1	0.49	2.84	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	25/10/2021	0908_SW060_211025	Normal	NSW_0908_PFASOMP	0.85	16.3	8.41	24.7	34.2	1.07	1.42	0.94	<0.02	0.5	0.77	3.50	0.43	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	15/11/2021	0908_SW060_211115	Normal	NSW_0908_PFASOMP	0.62	13.4	8.04	21.4	29.7	1.22	1.14	0.63	<0.02	0.4	0.60	3.29	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	18/05/2022	0908_SW060_220518	Normal	NSW_0908_PFASOMP	0.31	7.21	3.90	11.1	14.1	0.35	0.50	0.35	<0.02	0.1	0.18	1.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	9/11/2022	0908_SW060_221109	Normal	NSW_0908_PFASOMP	0.60	16.3	6.90	23.2	28.6	0.56	0.92	0.71	<0.02	0.2	0.30	1.80	0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	9/11/2022	0908_OC109_221109	Field_D	NSW_0908_PFASOMP	0.62	16.1	7.12	23.2	28.9	0.61	0.68	0.75	<0.02	0.2	0.38	2.14	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW060	9/11/2022	0908_OC209_221109	Interlab_D	NSW_0908_PFASOMP	0.57	16	6.0	22	27	0.60	0.72	0.62	<0.02	0.21	0.34	1.7	0.25	<0.01	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	
SW062	17/06/2014	DD5_WATER	Normal	NSW_0908_PFASOMP	<0.01	0.11	0.41	0.52	-	0.15	-	-	<0.01	-	0.04	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SW062	13/01/2016	DD5_SW_1312016	Normal	NSW_0908_PFASOMP	<0.002	0.088	-	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW062	14/12/2016	DD5_SW_161214	Normal	NSW_0908_PFASOMP	<0.05	0.76	0.8	1.56	2.06	0.1	0.18	<0.05	<0.05	<0.1	<0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	
SW062	12/04/2018	DD5_SW_12042018	Normal	NSW_0908_PFASOMP	0.09	2.69	1.21	3.9	4.64	0.11	0.12	0.09	<0.02	<0.1	0.07	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	7/12/2018	0908_DD5_SW_181207	Normal	NSW_0908_PFASOMP	0.1	2.64	1.35	3.99	4.86	0.13	0.14	0.1	<0.02	<0.1	0.08	0.26	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	7/12/2018	0908_OC110_SW_181207	Field_D	NSW_0908_PFASOMP	0.1	2.35	1.17	3.52	4.36	0.11	0.15	0.1	<0.02	<0.1	0.06	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	7/12/2018	0908_OC205_SW_181207	Interlab_D	NSW_0908_PFASOMP	0.07	2	1.1	3.1	-	0.091	0.098	0.061	<0.01	<0.05	0.071	0.19	0.047	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	
SW062	13/06/2019	0908_DD5_SW_190613	Normal	NSW_0908_PFASOMP	0.03	1.07	0.53	1.6	1.97	0.08	0.1	0.04	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	6/11/2019	0908_DD5_SW_191106	Normal	NSW_0908_PFASOMP	0.06	1.40	0.78	2.18	2.91	0.11	0.14	0.05	<0.02	<0.1	0.09	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	2/06/2020	0908_SW062_200602	Normal	NSW_0908_PFASOMP	0.12	2.63	1.96	4.59	5.85	0.28	0.26	0.06	<0.02	<0.1	0.11	0.36	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	20/11/2020	0908_SW062_201120	Normal	NSW_0908_PFASOMP	<0.01	0.12	0.15	0.27	0.32	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	11/05/2021	0908_SW062_210511	Normal	NSW_0908_PFASOMP	0.09	2.32	1.47	3.79	4.91	0.12	0.14	0.10	<0.02	<0.1	0.13	0.40	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
SW062	17/11/2021	0908_SW062_211117	Normal	NSW_0908_PFASOMP	<0.01	0.08	0.1																													









Table T11 - Historical Sediment Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOA	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	
SD007	11/05/2021	0908_SD007_210511	Normal	NSW_0908_PFAASOMP	<0.0002	0.0068	0.0005	0.0073	0.0073	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD007	16/11/2021	0908_SD007_211116	Normal	NSW_0908_PFAASOMP	<0.0002	0.0471	0.0011	0.0482	0.0487	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD007	18/05/2022	0908_SD007_220518	Normal	NSW_0908_PFAASOMP	<0.0002	0.0050	0.0006	0.0056	0.0056	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD007	8/11/2022	0908_SD007_221108	Normal	NSW_0908_PFAASOMP	<0.0002	0.0088	0.0009	0.0097	0.0097	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	28/01/2016	MD8_SD_28012016	Normal	NSW_0908_PFAAS	<0.0005	<0.0005	-	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SD009	14/12/2016	MD8_SED_20161214	Normal	NSW_0908_PFAAS	0.0004	0.0868	0.0116	0.0984	0.103	0.0006	0.0007	0.0021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.001	<0.0002	<0.0002	0.0003	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	1/05/2018	MD8_SED_01052018	Normal	NSW_0908_PFAAS	0.0003	0.0702	0.0105	0.0807	0.0867	<0.0002	<0.0002	0.0003	0.0009	0.0024	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	7/12/2018	0908_MD8_SD_181207	Normal	NSW_0908_PFAAS	<0.0002	<0.0002	0.0006	0.0006	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	7/12/2018	0908_MD8_SD_181207	Normal	NSW_0908_PFAAS	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SD009	13/06/2019	0908_MD8_SD_190613	Normal	NSW_0908_PFAAS	<0.0002	0.0016	0.0002	0.0018	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	6/11/2019	0908_MD8_SD_191106	Normal	NSW_0908_PFAASOMP	<0.0002	0.0057	0.0005	0.0062	0.0062	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	24/06/2020	0908_SD009_200624	Normal	NSW_0908_PFAASOMP	<0.0002	0.0051	0.0003	0.0054	0.0054	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	26/11/2020	0908_SD009_201126	Normal	NSW_0908_PFAASOMP	0.0002	0.0556	0.0030	0.0586	0.0598	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	11/05/2021	0908_SD009_210511	Normal	NSW_0908_PFAASOMP	<0.0002	0.0247	0.0012	0.0259	0.0259	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	17/11/2021	0908_SD009_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0171	0.0009	0.0180	0.0188	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	17/05/2022	0908_SD009_220517	Normal	NSW_0908_PFAASOMP	<0.0002	0.0077	0.0004	0.0081	0.0085	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	17/05/2022	0908_OC105_220517	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0194	0.0016	0.0210	0.0226	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	17/05/2022	0908_OC205_220517	Interlab_D	NSW_0908_PFAASOMP	0.0001	0.035	0.0013	0.036	0.039	<0.0001	<0.0001	0.0003	0.001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
SD009	8/11/2022	0908_SD009_221108	Normal	NSW_0908_PFAASOMP	<0.0002	0.0133	0.0013	0.0146	0.0159	0.0005	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	8/11/2022	0908_OC107_221108	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0062	0.0008	0.0070	0.0070	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD009	8/11/2022	0908_OC207_221108	Interlab_D	NSW_0908_PFAASOMP	<0.0001	0.0059	0.0005	0.0064	0.0067	<0.0001	<0.0001	0.0003	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
SD011	12/02/2016	MD10_SD_12022016	Normal	NSW_0908_PFAAS	<0.0005	0.0006	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SD011	12/02/2016	OC103_SD_12022016	Field_D	NSW_0908_PFAAS	<0.0005	0.0006	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SD011	13/02/2017	MD10_SED_130217	Normal	NSW_0908_PFAAS	<0.0002	0.0028	0.0005	0.0033	0.0033	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD011	7/12/2018	0908_MD10_SD_181207	Normal	NSW_0908_PFAAS	0.0002	0.0154	0.0015	0.0169	0.0187	<0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD011	13/06/2019	0908_MD10_SD_190613	Normal	NSW_0908_PFAAS	<0.0002	0.0084	0.0006	0.009	0.009	<0.0002	<0.0002	<0.0002	<0.0002																				





Table T11 - Historical Sediment Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001		
SD055	14/01/2016	DD1_SD_14012016	Normal	NSW_0908_PFA	<0.0005	0.007	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SD055	16/12/2016	DD1_SED_161216	Normal	NSW_0908_PFA	<0.0002	0.0055	0.0015	0.007	0.007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	12/04/2018	DD1_SED_13042018	Normal	NSW_0908_PFA	<0.0002	0.0011	0.0007	0.0018	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	7/12/2018	0908_DD1_SD_181207	Normal	NSW_0908_PFA	0.0004	0.0042	0.0062	0.0104	0.0136	<0.0002	0.0002	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	13/06/2019	0908_DD1_SD_190613	Normal	NSW_0908_PFA	<0.0002	0.003	0.0004	0.0034	0.0055	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	5/11/2019	0908_DD1_SD_191105	Normal	NSW_0908_PFA	<0.0002	0.0008	0.0006	0.0014	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	22/05/2020	0908_SD055_200522	Normal	NSW_0908_PFA	0.0003	0.0083	0.0009	0.0092	0.0115	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	23/11/2020	0908_SD055_201123	Normal	NSW_0908_PFA	<0.0002	0.0022	0.0003	0.0025	0.0028	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	11/05/2021	0908_SD055_210511	Normal	NSW_0908_PFA	<0.0002	0.0136	0.0023	0.0159	0.0185	<0.0002	<0.0002	<0.0002	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	16/11/2021	0908_SD055_211116	Normal	NSW_0908_PFA	<0.0002	0.0038	0.0011	0.0049	0.0049	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	16/11/2021	0908_OC109_211116	Field_D	NSW_0908_PFA	<0.0002	0.0048	0.0013	0.0061	0.0061	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	19/05/2022	0908_SD055_220519	Normal	NSW_0908_PFA	<0.0002	0.0092	0.0007	0.0099	0.0099	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	19/05/2022	0908_QC209_220519	Interlab_D	NSW_0908_PFA	<0.0001	0.01	0.0006	0.011	0.011	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD055	10/11/2022	0908_SD055_221110	Normal	NSW_0908_PFA	0.0003	0.0323	0.0054	0.0377	0.0423	<0.0002	<0.0002	0.0002	0.0022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD059	19/06/2014	DD2_SEDIMENT	Normal	NSW_0908_PFA	<0.005	0.24	0.042	0.282	-	<0.005	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
SD059	14/01/2016	DD2_SD_14012016	Normal	NSW_0908_PFA	<0.0005	0.0011	-	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SD059	14/01/2016	QC200_SD_1412016	Field_D	NSW_0908_PFA	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
SD059	14/12/2016	DD2_SED_161214	Normal	NSW_0908_PFA	<0.0002	0.0066	0.001	0.0076	0.0076	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	12/04/2018	DD2_SED_12042018	Normal	NSW_0908_PFA	<0.0002	0.0018	0.0003	0.0021	0.0026	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	6/12/2018	0908_DD2_SD_181206	Normal	NSW_0908_PFA	<0.0002	0.0006	<0.0002	0.0006	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	6/12/2018	0908_DD2_SD_181206	Normal	NSW_0908_PFA	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SD059	13/06/2019	0908_DD2_SD_190613	Normal	NSW_0908_PFA	<0.0002	0.0008	0.0003	0.0011	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	5/11/2019	0908_DD2_SD_191105	Normal	NSW_0908_PFA	<0.0002	0.0153	0.0018	0.0171	0.0193	<0.0002	<0.0002	<0.0002	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	4/06/2020	0908_SD059_200604	Normal	NSW_0908_PFA	<0.0002	0.0124	0.0016	0.0140	0.0152	<0.0002	<0.0002	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD059	13/11/2020	0908_SD059_201113	Normal	NSW_0908_PFA	0.0004	0.0662	0.0006	0.0668	0.0685	<0.0002	<0.0002	0.0005	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD059	11/05/2021	0908_SD059_210511	Normal	NSW_0908_PFA	<0.0002	0.0196	0.0018	0.0214	0.0265																										



Table T11 - Historical Sediment Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
SD110	16/11/2021	0908_SD110_211116	Normal	NSW_0908_PFASOMP	<0.0002	0.189	0.0083	0.197	0.259	0.0022	0.0003	0.0005	0.0028	<0.001	0.0012	0.0044	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD110	19/05/2022	0908_SD110_220519	Normal	NSW_0908_PFASOMP	<0.0002	0.200	0.0054	0.205	0.238	<0.0002	<0.0002	0.0015	0.0006	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD110	10/11/2022	0908_SD110_221110	Normal	NSW_0908_PFASOMP	0.0006	0.0967	0.0170	0.114	0.129	0.0007	0.0005	0.0007	0.0013	0.001	0.0023	0.0020	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	7/12/2018	0908_FC1A_SD_181207	Normal	NSW_0908_PFAS	<0.0002	0.0071	0.0011	0.0082	0.0089	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	14/06/2019	0908_FC1A_SD_190614	Normal	NSW_0908_PFAS	<0.0002	0.0039	0.0002	0.0041	0.0041	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	8/11/2019	0908_FC1A_SD_191108	Normal	NSW_0908_PFASOMP	0.0003	0.0029	0.0008	0.0037	0.0042	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	12/06/2020	0908_SD254_200612	Normal	NSW_0908_PFASOMP	0.0025	0.0387	0.0052	0.0439	0.0500	0.0006	0.0003	0.0006	0.0006	<0.001	<0.0002	0.0013	0.0006	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	12/06/2020	0908_OC111_200612	Field_D	NSW_0908_PFASOMP	0.0025	0.0322	0.0048	0.0370	0.0422	<0.0002	0.0003	0.0005	<0.0002	<0.001	<0.0002	0.0013	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	12/06/2020	0908_OC211_200612	Interlab_D	NSW_0908_PFASOMP	0.0021	0.039	0.0043	-	-	<0.001	<0.001	<0.001	<0.001	<0.002	0.0019	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
SD254	13/11/2020	0908_SD254_201113	Normal	NSW_0908_PFASOMP	0.0044	0.0370	0.0032	0.0402	0.0482	<0.0002	<0.0002	0.0006	<0.0002	<0.001	0.0004	0.0015	0.0009	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	10/05/2021	0908_SD254_210510	Normal	NSW_0908_PFASOMP	0.0037	0.0284	0.0031	0.0315	0.0385	<0.0002	0.0002	0.0004	<0.0002	<0.001	0.0005	0.0013	0.0006	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	26/11/2021	0908_SD254_211126	Normal	NSW_0908_PFASOMP	0.0015	0.0416	0.0041	0.0457	0.0494	<0.0002	<0.0002	0.0006	0.0004	<0.001	<0.0002	0.0006	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	27/05/2022	0908_SD254_220527	Normal	NSW_0908_PFASOMP	0.0011	0.0276	0.0030	0.0306	0.0339	<0.0002	<0.0002	0.0003	0.0006	<0.001	<0.0002	0.0005	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD254	15/11/2022	0908_SD254_221115	Normal	NSW_0908_PFASOMP	0.0005	0.0378	0.0023	0.0401	0.0423	<0.0002	<0.0002	0.0003	0.0012	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	7/12/2018	0908_FC1B_SD_181207	Normal	NSW_0908_PFAS	<0.0002	0.0137	0.0003	0.014	0.0145	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	14/06/2019	0908_FC1B_SD_190614	Normal	NSW_0908_PFAS	<0.0002	0.0024	0.0004	0.0028	0.0028	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	8/11/2019	0908_FC1B_SD_191108	Normal	NSW_0908_PFASOMP	0.0004	0.0075	0.0020	0.0095	0.0103	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	12/06/2020	0908_SD255_200612	Normal	NSW_0908_PFASOMP	<0.0002	0.0116	0.0011	0.0127	0.0127	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	13/11/2020	0908_SD255_201113	Normal	NSW_0908_PFASOMP	0.0008	0.0094	0.0026	0.0120	0.0134	<0.0002	<0.0002	0.0003	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	10/05/2021	0908_SD255_210510	Normal	NSW_0908_PFASOMP	0.0023	0.0433	0.0044	0.0477	0.0522	<0.0002	<0.0002	0.0007	<0.0002	<0.001	<0.0002	0.0010	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	26/11/2021	0908_SD255_211126	Normal	NSW_0908_PFASOMP	<0.0002	0.0154	0.0007	0.0161	0.0164	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	27/05/2022	0908_SD255_220527	Normal	NSW_0908_PFASOMP	<0.0002	0.0309	0.0008	0.0317	0.0320	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD255	15/11/2022	0908_SD255_221115	Normal	NSW_0908_PFASOMP	<0.0002	0.0288	0.0007	0.0295	0.0299	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD259	21/02/2017	FCD4_SED_17022017	Normal	NSW_0908_PFAS	<0.0002	0																											

Table T12 - Historical Soil Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic				PFAS - Perfluoroalkyl Sulfonamides											
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)						
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg						
LOR	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005						
PFAS NEMP 2020 Public open space (HIL C)	10	1	1	1																															
PFAS NEMP 2020 Ecological direct exposure	10	1																																	
PFAS NEMP 2020 Ecological indirect exposure		0.01																																	
Location Code	Date	Field ID	Sample Type	Project ID																															
SS101	15/11/2019	0908_SS101_191115	Normal	NSW_0908_PFAASOMP	0.0008	0.0245	0.0079	0.0324	0.0381	0.0007	0.0004	0.0003	<0.0002	<0.001	0.0014	0.0015	0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS101	19/06/2020	0908_SS001_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0028	0.0004	0.0032	0.0032	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	26/11/2020	0908_SS101_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0139	0.0011	0.0150	0.0164	0.0006	0.0008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	12/05/2021	0908_SS101_210512	Normal	NSW_0908_PFAASOMP	<0.0002	0.0058	0.0006	0.0064	0.0064	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	17/11/2021	0908_SS101_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0040	0.0004	0.0044	0.0044	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	16/05/2022	0908_SS101_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0023	0.0002	0.0025	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	7/11/2022	0908_SS101_221107	Normal	NSW_0908_PFAASOMP	<0.0002	0.0030	0.0003	0.0033	0.0033	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	7/11/2022	0908_OC102_221107	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0026	0.0005	0.0031	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS101	7/11/2022	0908_OC202_221107	Interlab_D	NSW_0908_PFAASOMP	<0.0002	0.0022	0.0002	0.0024	0.0024	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	15/11/2019	0908_SS102_191115	Normal	NSW_0908_PFAASOMP	0.0003	0.0119	0.0072	0.0191	0.0236	0.0003	0.0004	0.0004	<0.0002	<0.001	0.0005	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	19/06/2020	0908_SS002_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0031	0.0003	0.0034	0.0034	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	26/11/2020	0908_SS102_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0190	0.0021	0.0211	0.0211	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	26/11/2020	0908_OC111_201126	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0208	0.0021	0.0229	0.0229	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	26/11/2020	0908_OC211_201126	Interlab_D	NSW_0908_PFAASOMP	<0.001	0.015	0.0018	-	-	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.002	<0.001	
SS102	12/05/2021	0908_SS102_210512	Normal	NSW_0908_PFAASOMP	<0.0002	0.0091	0.0010	0.0101	0.0101	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	17/11/2021	0908_SS102_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0031	<0.0002	0.0031	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	16/05/2022	0908_SS102_220516	Normal	NSW_0908_PFAASOMP	0.0002	0.0149	0.0008	0.0157	0.0165	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	16/05/2022	0908_OC101_220516	Field_D	NSW_0908_PFAASOMP	0.0002	0.0132	0.0007	0.0139	0.0149	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS102	7/11/2022	0908_SS102_221107	Normal	NSW_0908_PFAASOMP	0.0003	0.0408	0.0060	0.0468	0.0486	<0.0002	<0.0002	0.0006	<0.0002	<0.001	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS103	15/11/2019	0908_SS103_191115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0022	0.0002	0.0024	0.0024	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	
SS103	19/06/2020	0908_SS003_200619	Normal	NSW_0908_PFAASOMP	<0.0002	0.0121	0.0019	0.0140	0.0142	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0005	<0.0002	<0.0005	<0.0002	<0	



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# Appendix C

## Calibration Certificates

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-7876
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
<b>WAM Scientific</b> certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	03/11/2022
<b>Calibration Due</b>	03/05/2023



**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8023
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	03/11/2022
<b>Calibration Due</b>	03/05/2023

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	20L105295
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	15.4	15.5	15.4	°C
pH	pH 4.00	386466	4.01	4.04	4.01	pH
pH	pH 7.00	387329	7.00	7.04	7.00	pH
Conductivity	2760 µS/cm at 25°C	388521	2760	2820	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	244.5	244.0	244.5	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	0.0	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	94.9	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	03/11/2022
<b>Calibration Due</b>	03/05/2023

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Professional Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	21C100008
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	15.2	14.8	15.2	°C
pH	pH 4.00	386466	4.01	3.97	4.01	pH
pH	pH 7.00	387329	7.00	7.00	7.00	pH
Conductivity	2760 µS/cm at 25°C	388521	2760	2688	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	244.7	246.5	244.7	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	-0.1	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	97.1	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	03/11/2022
<b>Calibration Due</b>	03/05/2023

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	BM, JR, CM, IW

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM Scientific
Make and Model:	YSI Pro-plus
Serial Number:	WQM 210100_008

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	7/11/22 9:35				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.0	2549	0	
Bump Test Reading:	4.0	7.0	2558	0	
Bump Test Temperature:	21.0	21.0	21.0	21.0	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

N/A

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

7/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	CM, BM, JR, IW

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM Scientific
Make and Model:	YSI pro-plus
Serial Number:	WQM 20105295

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	7/11/22 9:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0				
Calibration Reading:	4.0				
Calibration Temperature:	20.0				

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.0	2496	0.0	
Bump Test Reading:	4.08	7.05	2430	0.02	
Bump Test Temperature:	20.0	20.0	26.0	20.0	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

pH 4 calibrated

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

7/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	B. Mansfield

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM Scientific
Make and Model:	YSI pro-plus
Serial Number:	210100008

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	8/11/22 7:20				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.02		/	
Calibration Reading:	4.0	7.02			
Calibration Temperature:	19.9	20.2			

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	8/11/22 7:15				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7	2496	0	/
Bump Test Reading:	4.24	6.91	2509	0	
Bump Test Temperature:	19.9	20.2	20.1	20.1	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

\* pH 4 calibrated  
 \* pH 7 calibrated

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

8/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	RAAF WILLIMTOWN	Client:	Defence
PM Name:		Fieldwork Staff Name:	CM & IW

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI PRO PLUS
Serial Number:	20L105295

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS BUMP TEST**

Date and Time:	8.11.22 0745				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2549	0	/
Calibration Reading:	3.99	7.00	2540	0	/
Calibration Temperature:	20.4	20.1	21.0	20.2	/

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

CM  
Fieldwork Staff Signature

8.11.22  
Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	BM

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM Scientific
Make and Model:	YSI pro plus
Serial Number:	210100008

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	9/11/22 7:50			
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:		7.02		
Calibration Reading:		7.02		
Calibration Temperature:		19.2		

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	9/11/22 7:45			
Parameter	Acidity		Conductivity	Dissolved Oxygen
Units	pH	pH	µS/cm	ppm
Calibration Standard Concentration:	4.0	7.0	2444	0
Bump Test Reading:	3.97	6.91	2514	0
Bump Test Temperature:	18.6	19.2	19.1	19.1

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

pH 7 calibrated

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

9/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	RAPP WILLIAMTOWN	Client:	Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	CM & IW

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI PRO PWS
Serial Number:	20 L105295

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS: BUMP TEST**

Date and Time:	9/11/22 0738				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2549	0	/
Calibration Reading:	4.00	7.00	2545	0	/
Calibration Temperature:	20.2	20.2	21.0	20.0	/

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

[Empty space for comments]

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[Signature]  
Fieldwork Staff Signature

9/11/22  
Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	M.H. + B.M.

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM scientific
Make and Model:	YSI Pro Plus
Serial Number:	202105295

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	10/11/22				7:50	
Parameter	Acidity		Conductivity	Dissolved Oxygen		
Units	pH	pH	µS/cm	ppm	ppm	
Calibration Standard Concentration:	7.02	4.00	2444			
Calibration Reading:	7.01	4.00	2444			
Calibration Temperature:	11.7	19.5	19.1			

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	10/11/22				7:50	
Parameter	Acidity		Conductivity	Dissolved Oxygen		
Units	pH	pH	µS/cm	ppm	ppm	
Calibration Standard Concentration:	7.02	4.00	2444	0.00		
Bump Test Reading:	7.16	4.07	2262	0.0		
Bump Test Temperature:	18.9	19.5	19.0	19.1		

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

pH 7 calibration  
 pH 4 probe calibrated  
 conductivity probe calibrated

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

10/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	B.M + M.H.

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM Scientific
Make and Model:	VST Scientific
Serial Number:	210400008

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:		4.00			
Calibration Reading:		4.00			
Calibration Temperature:		19.4			

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
10/11/22 7:35					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.02	4.00	2444	0.00	
Bump Test Reading:	7.01	4.05	2440	0.00	
Bump Test Temperature:	18.7	19.4	18.7	19.0	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

pH 4 probe calibrated

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

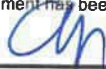
10/11/22  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	WLM OMP	Project Number:	60612562		
Project Location:	RAAF WILLIAMSDOWN	Client:	Defence		
PM Name:	[REDACTED]	Fieldwork Staff Name:	CM & IW		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM				
Make and Model:	YSI PRO PLUS				
Serial Number:	20L106295				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b> BUMP TEST					
Date and Time:	11/11/22 0830				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2590	0	
Calibration Reading:	3.99	7.00	2540	0	
Calibration Temperature:	20.1	20.4	21.3	21.0	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			11/11/22 _____ Date		
Distribution: Project Central File					

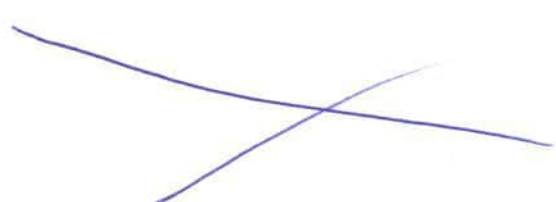





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**FQM - Water Quality Meter Calibration Record**


Q4AN(EV)-410-FM1

<b>Project Name:</b>	WLM OMP		<b>Project Number:</b>	60612562	
<b>Project Location:</b>	WLM		<b>Client:</b>	Defence	
<b>PM Name:</b>	GT		<b>Fieldwork Staff Name:</b>	BM, JR	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WATER METER WAM Scientific				
Make and Model:	4SE pro plus				
Serial Number:	21C100008				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	15/11/22 7:10				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2444	0	
Bump Test Reading:	4.01	6.99	2402	0	
Bump Test Temperature:	19.6	19.6	19.8	19.8	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ <b>Fieldwork Staff Signature</b>			15/11/22 _____ <b>Date</b>		
<b>Distribution:</b> Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

<b>Project Name:</b>	WLM OMP		<b>Project Number:</b>	60612562	
<b>Project Location:</b>	WLM		<b>Client:</b>	Defence	
<b>PM Name:</b>	GT		<b>Fieldwork Staff Name:</b>	BM, JR	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM scientific				
Make and Model:	YSI pro plus				
Serial Number:	21C100 008				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	14/11/22 8:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.0	7.0	2444	0	
Bump Test Reading:	4.0	7.02	2410	0	
Bump Test Temperature:	18.7	18.7	18.9	18.8	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			14/11/22 _____ Date		
Distribution: Project Central File					

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown RAAF Base	Client:	Department of Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM
Make and Model:	YSI Pro Plus.
Serial Number:	21C100008

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	25.11.22 7:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	10.00	2760 (2605)	/	/
Calibration Reading:	4.00	10.00	2607	/	/
Calibration Temperature:	22.1	22.4	22.4	/	/

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.



Fieldwork Staff Signature

25/11/22

Date

Distribution: Project Central File



DRAFT

# Appendix D

## Analytical Data Validation

## DATA VALIDATION REPORT

Project number:	60612562	Validation by:	[REDACTED]	Date:	09/12/2022
Client:	Department of Defence	Data verified by:	[REDACTED]	Date:	23/02/2023
Site:	RAAF Base Williamtown	Project Manager:	[REDACTED]		
Matrix type:	Groundwater, Surface Water, Sediment and Surface Soil				
Primary samples:	93 Groundwater samples, 21 Surface Water samples, 24 Sediment samples and 12 Surface Soil samples				
Laboratory:	Primary: ALS, Secondary: Envirolab				
Lab reference:	ES2240971, ES2242731, ES2241532 (ALS), 310531 (Envirolab)				
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.				
<b>Field Quality Assurance and Quality Control</b>					
Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).				
Sampling personnel	Sampling was conducted by [REDACTED] and [REDACTED] between 7/11/2022 and 25/11/2022. Field personnel were both suitably qualified and experienced AECOM Environmental Scientists and Engineers.				
Sampling Methodology	<p>All water and sediment samples were collected in accordance with the methodology outlined in the SAQP (AECOM, 2022).</p> <p>While not a deviation from the SAQP (AECOM, 2022), it is noted that 1 groundwater sample was collected with the use of a bailer, as the previously installed HydraSleeves™ was not able to be recovered.</p> <p>After each sample was collected, reusable equipment was decontaminated using Liquinox and potable water, and the consumables (nitrile gloves, HydraSleeve™ materials and/or bailers) were disposed of in waste bins.</p>				
Chain of Custody (COC)	All samples collected were reported on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.				
Rinsate Blank	Rinsate blank samples were collected at a frequency of 1 per day of sampling (18 in total) where equipment was re-used and decontaminated between sample points. Rinsate blank samples were either collected from the final rinse of the interface probe or sampling trowel following decontamination, using laboratory-supplied de-ionised water.				
Frequency of field QC	<p>Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected at or above a frequency of 1 in ten primary samples (10%), meeting the DQI. In total:</p> <ul style="list-style-type: none"> <li>• 12 water field duplicates and 12 water field triplicates were collected (10%) for 114 primary water samples</li> <li>• 4 sediment/soil field duplicates and 4 sediment/soil field triplicates were collected (10%) for 36 primary sediment/soil samples in total.</li> </ul>				
Handling and preservation	<p>All samples were received by the primary laboratory in appropriate containers, with ice present, at temperatures between 2.9 and 4.6°C, within the recommended temperature range (&lt;6°C).</p> <p>All samples were received by the secondary laboratory in appropriate containers, with ice present, however, the sample receipt temperature was recorded at 12.0 °C, outside the recommended temperature range. Given that the laboratory reported the</p>				

## DATA VALIDATION REPORT

Calibration of equipment	<p>cooling media was ice, AECOM considers that the samples were appropriately preserved.</p> <p>Measurements of water geochemical parameters were undertaken using YSI Professional Plus water quality meters, which were calibrated by the supplier prior to use, in accordance with the manufacturer's instructions and bump tested daily by the field personnel. Measurements of depth to groundwater were undertaken using interface probes, which were serviced by the supplier prior to use.</p> <p>All equipment calibration and service certificates are presented in Appendix C.</p>
<b>Laboratory QA/QC</b>	
Laboratory DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2022).
Tests requested/reported	<p>All samples were analysed for per- and polyfluoroalkyl substances (PFAS) extended suite, at the standard level of detection.</p> <p>All sample requests for analysis are reported on the Chain of Custody (COC).</p>
Holding time compliance	All samples were extracted and analysed by the laboratory within the recommended holding times.
Laboratory accreditation	The primary laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney) a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825). The secondary samples were analysed at Envirolab Services, also a NATA accredited laboratory (accreditation number 2901).
Frequency of laboratory QC	The primary laboratory ALS reported a sufficient frequency of quality control samples to assess whether the results have been reported with acceptable accuracy and precision.
Method Blank	All method blank concentrations were reported <LOR (limit of reporting) for the analytes tested, meeting the project requirements. This is presented in the Quality Control Reports for both laboratories.
Laboratory duplicate RPDs	The reported laboratory duplicate's Relative Percentage Differences (RPDs) were within laboratory control limits. The laboratory duplicate RPDs are presented in the Quality Control Reports for the primary laboratory.
LCS recovery	Laboratory control spike (LCS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.
Matrix spike recovery	<p>Matrix spike (MS) recoveries were within control limits with the exception of:</p> <p>Non-determined MS recoveries:</p> <ul style="list-style-type: none"> <li>• ES2240971: Perfluorooctane sulfonic acid (PFOS), Anonymous</li> </ul> <p>These non-determinations were due to background levels being greater than or equal to four times spike levels, which do not reflect method bias or affect data interpretation. Additionally, it is noted that the non-determination was recorded for a non-AECOM sample.</p>
Surrogate spike recovery	The reported surrogate spike recoveries were within laboratory control limits.

# DATA VALIDATION REPORT

## QA/QC Data Evaluation

Comparison of Field Observations and Laboratory Results	No anomalies between field observations and analytical results were noted.
Data transcription	A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and the tables generated by AECOM.
Limits of reporting	With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.
Rinsate Blank sample results	The concentrations of PFAS in the Rinsate Blank samples (Table D3) were below the LOR, indicating decontamination procedures were adequate.
RPDs for Field Duplicates / Triplicates	<p>RPDs for field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were reported within acceptable limits (<math>\leq 30\%</math>, or <math>\leq 50\%</math> for results 10-20 x LOR, or No Limit for results <math>&lt; 10</math> x LOR), with the exception of:</p> <p><u>Intra-laboratory duplicates (Field Duplicates) RPDs</u></p> <p>SD014/QC104</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 66%</li></ul> <p>SD009/QC107</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 73%</li></ul> <p>SD060/QC111</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 35%</li></ul> <p>MW281S/QC103</p> <ul style="list-style-type: none"><li>- Perfluoroheptane sulfonic acid (PFHpS): 58%</li></ul> <p><u>Inter-laboratory duplicates (Field Triplicates) RPDs</u></p> <p>SS101/QC202</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 31%</li></ul> <p>SD014/QC204</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 136%</li></ul> <p>SD009/QC207</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 77%</li></ul> <p>SD060/QC211</p> <ul style="list-style-type: none"><li>- Perfluorohexane sulfonic acid (PFHxS): 31%</li></ul> <p>SW005/QC208</p> <ul style="list-style-type: none"><li>- Perfluorooctane sulfonic acid (PFOS): 34%</li></ul> <p>The elevated RPDs for groundwater and surface water duplicate pairs were generally marginally above acceptable limits and were within the same order of magnitude. Therefore, AECOM considers that these are not significant to impact the interpretation of results.</p> <p>The elevated RPDs for sediment are likely to be attributed to the heterogeneous nature of the sediment sampled, and therefore are considered acceptable.</p>

## DATA VALIDATION REPORT

Where required for quantitative purposes, the highest concentrations from the primary and duplicate pairs were used in the assessment.

### Overall Assessment

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

#### Attached:

Table D1 – Water RPDs

Table D2 – Soil and Sediment RPDs

Table D3 – Rinsate Blank Results

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971
Field ID	0908_MW256S_221107	0908_QC100_221107	RPD	0908_MW240D_221110	0908_QC101_221110	RPD	0908_MW281S_221110
Sampled Date/Time	7/11/2022 13:53	7/11/2022 13:53		10/11/2022 9:50	10/11/2022 9:50		10/11/2022 10:21
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate		Primary

Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	2.97	3.79	24
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	41.4	50	19
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	0.06	0.09	40	11.5	12.9	11
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.44	0.47	7
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.14	0.18	25
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.94	1.06	12
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<b>2.55</b>	<b>4.61</b>	<b>58</b>
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.29	0.26	11
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	0.29	0.34	16
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	0.1	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	0.06	0.09	40	52.9	62.9	17
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	0.06	0.09	40	60.5	73.7	20
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	0.06	0.09	40	57.5	68.6	18

Notes  
LOR = Limit of Reporting  
µg/L = micrograms per litre  
nc = non calculable as concentrations in one or both samples are below the LOR  
RPDs have only been considered where a concentration is greater than 1 times the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.



Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971
Field ID	0908_SW060_221109	0908_QC109_221109	RPD	0908_MW121_221108	0908_QC110_221108	RPD	0908_MW278D_221109
Sampled Date/Time	9/11/2022 12:35	9/11/2022 12:35		8/11/2022 11:59	8/11/2022 11:59		9/11/2022 11:43
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate		Primary

Chem_Group	ChemName	Units	LOR									
Per- and Polyfluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.6	0.62	3	<0.01	<0.01	nc	<0.01	<0.01	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	16.3	16.1	1	0.02	0.02	0	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	6.9	7.12	3	<0.01	0.01	nc	<0.01	<0.01	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.92	0.68	30	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.3	0.38	24	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	1.8	2.14	17	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.71	0.75	5	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.32	0.28	13	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.56	0.61	9	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	0.2	0.2	0	<0.1	<0.1	nc	<0.1	<0.1	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	23.2	23.2	0	0.02	0.03	40	<0.01	<0.01	nc
	Sum of PFAS	µg/L	0.01	28.6	28.9	1	0.02	0.03	40	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	27	27.4	1	0.02	0.03	40	<0.01	<0.01	nc

Notes  
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 µg/L = micrograms per litre  
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 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.



Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971
Field ID	0908_MW169D_221109	0908_QC113_221109	RPD	0908_SW108_221110	0908_QC114_221110	RPD	0908_MW241S_221110
Sampled Date/Time	9/11/2022 14:07	9/11/2022 14:07		10/11/2022 11:32	10/11/2022 11:32		10/11/2022 14:55
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate		Primary

Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.1	0.08	22	<0.01	<0.01	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.06	0.08	29	4.48	4	11	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.12	0.19	45	1	1.13	12	<0.01	<0.01	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	nc	0.09	0.07	25	<0.02	<0.02	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.05	0.06	18	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.06	67	0.21	0.22	5	<0.02	<0.02	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.09	0.08	12	<0.02	<0.02	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	nc	0.05	0.04	22	<0.02	<0.02	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	nc	0.05	0.05	0	<0.02	<0.02	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<b>0.18</b>	<b>0.27</b>	<b>40</b>	5.48	5.13	7	<0.01	<0.01	nc
	Sum of PFAS	µg/L	0.01	<b>0.21</b>	<b>0.37</b>	<b>55</b>	6.12	5.73	7	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	<b>0.21</b>	<b>0.35</b>	<b>50</b>	5.94	5.58	6	<0.01	<0.01	nc

Notes  
 LOR = Limit of Reporting  
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 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	310531		ES2240971	310531		ES2240971	310531
Field ID	0908_MW256S_221107	0908_QC200_221107	RPD	0908_MW240D_221110	0908_QC201_221110	RPD	0908_MW281S_221110	0908_QC203_221110
Sampled Date/Time	7/11/2022 13:53	7/11/2022 13:53		10/11/2022 9:50	10/11/2022 9:50		10/11/2022 10:21	10/11/2022 10:21
Sample Type	Primary	Interlab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate

Chem_Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	2.97	2.8	6
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	41.4	31	29
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	0.06	0.07	15	11.5	9.6	18
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.44	0.34	26
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.14	0.2	35
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.94	0.9	4
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	2.55	2.4	6
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.29	0.28	4
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	0.29	0.31	7
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	0.06	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	0.06	0.07	15	52.9	41	25
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	0.06	0.07	15	60.5	48	23
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	nc	0.06			57.5		

Notes  
 LOR = Limit of Reporting  
 µg/L = micrograms per litre  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	310531	ES2240971	310531	ES2240971	310531
Field ID	0908_MW172_221110	0908_QC205_221110	0908_MW258D_221107	0908_QC206_221107	0908_SW005_221108	0908_QC208_221108
Sampled Date/Time	10/11/2022 11:04	10/11/2022 11:04	7/11/2022 15:31	7/11/2022 15:31	8/11/2022 9:06	8/11/2022 9:06
Sample Type	Primary	Interlab Duplicate	Primary	Interlab Duplicate	Primary	Interlab Duplicate

Chem_Group	ChemName	Units	LOR										
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.02	0.02	0	<0.01	<0.01	nc	<b>0.24</b>	<b>0.17</b>	<b>34</b>	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.48	0.42	13	<0.01	<0.01	nc	0.09	0.09	0	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.04	0.04	0	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.03	0.02	40	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.08	0.06	29	<0.02	<0.01	nc	0.02	0.02	0	
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.03	0	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Sum of PFHxS and PFOS	µg/L	0.01	0.5	0.44	13	<0.01	<0.01	nc	0.33	0.27	20	
	Sum of PFAS	µg/L	0.01	0.69	0.59	16	<0.01	<0.01	nc	0.35	0.29	19	
	Sum of PFAS (WA DER List)	µg/L	0.01	0.65			<0.01		nc	0.35			

Notes  
LOR = Limit of Reporting  
µg/L = micrograms per litre  
nc = non calculable as concentrations in one or both samples are below the LOR  
RPDs have only been considered where a concentration is greater than 1 times the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	310531	RPD	ES2240971	310531	RPD	ES2240971	310531	RPD
Field ID	0908_SW060_221109	0908_QC209_221109	RPD	0908_MW121_221108	0908_QC210_221108	RPD	0908_MW278D_221109	0908_QC212_221109	RPD
Sampled Date/Time	9/11/2022 12:35	9/11/2022 12:35		8/11/2022 11:59	8/11/2022 11:59		9/11/2022 11:43	9/11/2022 11:43	
Sample Type	Primary	Interlab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate	

Chem_Group	ChemName	Units	LOR										
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.6	0.57	5	<0.01	<0.01	nc	<0.01	<0.01	nc	
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	16.3	16	2	0.02	0.02	0	<0.01	<0.01	nc	
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	6.9	6	14	<0.01	<0.01	nc	<0.01	<0.01	nc	
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	0.92	0.72	24	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.3	0.34	13	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	1.8	1.7	6	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	0.71	0.62	14	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	0.32	0.25	25	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	0.56	0.6	7	<0.02	<0.01	nc	<0.02	<0.01	nc	
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	0.2	0.21	5	<0.1	<0.02	nc	<0.1	<0.02	nc	
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
	Sum of PFHxS and PFOS	µg/L	0.01	23.2	22	5	0.02	0.02	0	<0.01	<0.01	nc	
	Sum of PFAS	µg/L	0.01	28.6	27	6	0.02	0.02	0	<0.01	<0.01	nc	
	Sum of PFAS (WA DER List)	µg/L	0.01	27			0.02			<0.01			

Notes  
 LOR = Limit of Reporting  
 µg/L = micrograms per litre  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2240971	310531		ES2240971	310531	ES2240971	310531	ES2240971	310531
Field ID	0908_MW169D_221109	0908_QC213_221109	RPD	0908_SW108_221110	0908_QC214_221110	RPD	0908_MW241S_221110	0908_QC215_221110	RPD
Sampled Date/Time	9/11/2022 14:07	9/11/2022 14:07		10/11/2022 11:32	10/11/2022 11:32		10/11/2022 14:55	10/11/2022 14:55	
Sample Type	Primary	Interlab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate	

Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	0.1	0.08	22	<0.01	<0.01	nc
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.06	0.06	0	4.48	4.2	6	<0.01	<0.01	nc
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.12	0.16	29	1	0.98	2	<0.01	<0.01	nc
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.01	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.01	nc	<0.05	0.01	nc	<0.05	<0.01	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.02	nc
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.03	nc	0.09	0.07	25	<0.02	<0.01	nc
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	0.05	0.05	0	<0.02	<0.02	nc
	Perfluorononanoic acid (PFNA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.01	nc
	Perfluorohexanoic acid (PFHxA)	µg/L	0.02 : 0.01 (Interlab)	0.03	0.05	50	0.21	0.18	15	<0.02	<0.01	nc
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.09	0.09	0	<0.02	<0.01	nc
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.01	nc	0.05	0.04	22	<0.02	<0.01	nc
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02 : 0.05 (Interlab)	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.05	nc
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02 : 0.01 (Interlab)	<0.02	0.02	nc	0.05	0.09	57	<0.02	<0.01	nc
	Perfluorobutanoic acid (PFBA)	µg/L	0.1 : 0.02 (Interlab)	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.02	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05 : 0.5 (Interlab)	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.5	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05 : 0.1 (Interlab)	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.1	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02 : 0.1 (Interlab)	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.1	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
	Sum of PFHxS and PFOS	µg/L	0.01	0.18	0.22	20	5.48	5.2	5	<0.01	<0.01	nc
	Sum of PFAS	µg/L	0.01	0.21	0.32	42	6.12	5.8	5	<0.01	<0.01	nc
	Sum of PFAS (WA DER List)	µg/L	0.01	0.21			5.94			<0.01		

Notes  
 LOR = Limit of Reporting  
 µg/L = micrograms per litre  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D2 - Sediment and Soil Duplicate RPDs

Lab Report Number	ES2240971	ES2240971	RPD	ES2240971	ES2240971	RPD	ES2240971	ES2240971	RPD
Field ID	0908_SS101_221107	0908_QC102_221107		0908_SD014_221107	0908_QC104_221107		0908_SD009_221108	0908_QC107_221108	
Sampled Date/Time	7/11/2022 14:42	7/11/2022 14:42		7/11/2022 14:55	7/11/2022 14:55		8/11/2022 15:15	8/11/2022 15:15	
Sample Type	Primary	Intralab Duplicate		Primary	Intralab Duplicate		Primary	Intralab Duplicate	

Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.003	0.0026	14	<b>0.0508</b>	<b>0.0255</b>	<b>66</b>	<b>0.0133</b>	<b>0.0062</b>	<b>73</b>
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0003	0.0005	50	0.002	0.002	0	0.0013	0.0008	48
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	0.0005	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	0.0003	<0.0002	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	0.0005	<0.0002	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	nc	<0.001	<0.001	nc	<0.001	<0.001	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	nc	0.0011	<0.0002	nc	0.0005	<0.0002	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0033	0.0031	6	<b>0.0528</b>	<b>0.0275</b>	<b>63</b>	<b>0.0146</b>	<b>0.007</b>	<b>70</b>
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	0.0033	0.0031	6	<b>0.0544</b>	<b>0.0275</b>	<b>66</b>	<b>0.0159</b>	<b>0.007</b>	<b>78</b>
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0033	0.0031	6	<b>0.0528</b>	<b>0.0275</b>	<b>63</b>	<b>0.0151</b>	<b>0.007</b>	<b>73</b>

Notes  
 LOR = Limit of Reporting  
 mg/kg = milligrams per kilogram  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D2 - Sediment and Soil Duplicate RPDs

Lab Report Number	ES2240971	ES2240971	RPD	ES2240971	310531	ES2240971	310531		
Field ID	0908_SD060_221109	0908_QC111_221109	RPD	0908_SS101_221107	0908_QC202_221107	RPD	0908_SD014_221107	0908_QC204_221107	RPD
Sampled Date/Time	9/11/2022 12:35	9/11/2022 12:35		7/11/2022 14:42	7/11/2022 14:42		7/11/2022 14:55	7/11/2022 14:55	
Sample Type	Primary	Intralab Duplicate		Primary	Interlab Duplicate		Primary	Interlab Duplicate	

Chem Group	ChemName	Units	LOR									
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0003	0.0004	29	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0149</b>	<b>0.0213</b>	<b>35</b>	<b>0.003</b>	<b>0.0022</b>	<b>31</b>	<b>0.0508</b>	<b>0.0096</b>	<b>136</b>
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0034	0.0039	14	0.0003	0.0002	40	0.002	0.0004	133
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0003	0.0004	29	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0007	0.0009	25	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0004	0.0006	40	<0.0002	<0.0001	nc	0.0005	<0.0001	nc
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0002	0.0002	0	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	<0.0002	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	0.0011	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0183</b>	<b>0.0252</b>	<b>32</b>	<b>0.0033</b>	<b>0.0024</b>	<b>32</b>	<b>0.0528</b>	<b>0.01</b>	<b>136</b>
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0202</b>	<b>0.0277</b>	<b>31</b>	<b>0.0033</b>	<b>0.0024</b>	<b>32</b>	<b>0.0544</b>	<b>0.01</b>	<b>138</b>
	Sum of PFAS (WA DER List)	mg/kg	0.0002	<b>0.0195</b>	<b>0.0267</b>	<b>31</b>	0.0033			0.0528		

Notes  
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 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.

Table D2 - Sediment and Soil Duplicate RPDs

Lab Report Number	ES2240971	310531	ES2240971	310531
Field ID	0908_SD009_221108	0908_QC207_221108	0908_SD060_221109	0908_QC211_221109
Sampled Date/Time	8/11/2022 15:15	8/11/2022 15:15	9/11/2022 12:35	9/11/2022 12:35
Sample Type	Primary	Interlab Duplicate	Primary	Interlab Duplicate

Chem Group	ChemName	Units	LOR						
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0003	0.0003	0
	Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0133</b>	<b>0.0059</b>	<b>77</b>	0.0149	0.012	22
	Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0013	0.0005	89	<b>0.0034</b>	<b>0.0025</b>	<b>31</b>
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0005 : 0.0001 (Interlab)	<0.0005	<0.0001	nc	<0.0005	<0.0001	nc
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0005 : 0.0002 (Interlab)	<0.0005	<0.0002	nc	<0.0005	<0.0002	nc
	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorotridecanoic acid (PFTriDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0003	0.0003	0
	Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorononanoic acid (PFNA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<0.0002	<0.0001	nc
	Perfluorohexanoic acid (PFHxA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0007	0.0007	0
	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	0.0004	0.0003	29
	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0002 : 0.0001 (Interlab)	<0.0002	<0.0001	nc	<0.0002	0.0001	nc
	Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	0.0003	0.0003	0	<0.0002	<0.0002	nc
	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorodecanoic acid (PFDA)	mg/kg	0.0002 : 0.0005 (Interlab)	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc
	Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0002 : 0.0001 (Interlab)	0.0005	<0.0001	nc	0.0002	0.0002	0
	Perfluorobutanoic acid (PFBA)	mg/kg	0.001 : 0.0002 (Interlab)	<0.001	<0.0002	nc	<0.001	<0.0002	nc
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.005	nc	<0.0005	<0.005	nc
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.001	nc	<0.0005	<0.001	nc
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002 : 0.001 (Interlab)	0.0005	<0.001	nc	<0.0002	<0.001	nc
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
	Sum of PFHxS and PFOS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0146</b>	<b>0.0064</b>	<b>78</b>	0.0183	0.014	27
	Sum of PFAS	mg/kg	0.0002 : 0.0001 (Interlab)	<b>0.0159</b>	<b>0.0067</b>	<b>81</b>	0.0202	0.016	23
	Sum of PFAS (WA DER List)	mg/kg	0.0002	0.0151			0.0195		

Notes  
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 mg/kg = milligrams per kilogram  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 RPDs have only been considered where a concentration is greater than 1 times the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold.



Table D3 - Rinsate Blanks

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971
Field ID	0908_QC300_221107	0908_QC301_221107	0908_QC302_221107	0908_QC303_221107	0908_QC304_221108	0908_QC305_221108
Sampled_Date/Time	7/11/2022 15:43	7/11/2022 14:49	7/11/2022 15:45	7/11/2022 14:48	8/11/2022 17:00	8/11/2022 14:55
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Chem_Group	ChemName	Units	LOR						
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table D3 - Rinsate Blanks

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971	ES2240971
Field ID	0908_QC306_221108	0908_QC307_221109	0908_QC308_221109	0908_QC310_221109	0908_QC309_221110	0908_QC311_221110
Sampled_Date/Time	8/11/2022 17:37	9/11/2022 15:04	9/11/2022 15:05	9/11/2022 15:05	10/11/2022 17:00	10/11/2022 17:00
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Chem_Group	ChemName	Units	LOR						
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSEA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table D3 - Rinsate Blanks

Lab Report Number	ES2240971	ES2240971	ES2240971	ES2241524	ES2241524	ES2241524
Field ID	0908_QC312_221110	0908_QC313_221111	0908_QC314_221110	0908_QC315_221114	0908_QC316_221115	0908_QC317_221115
Sampled_Date/Time	10/11/2022 15:54	11/11/2022 14:04	10/11/2022 15:54	14/11/2022 16:44	15/11/2022 14:46	15/11/2022 14:48
Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate

Chem_Group	ChemName	Units	LOR						
Per- and Poly-fluoroalkyl Substances	Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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# Appendix E

## Laboratory Certificates

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2240971</b> <b>Amendment</b> : <b>3</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44620</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>0908_Williamtown</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>158</b> <b>No. of samples analysed</b> : <b>157</b>	<b>Page</b> : 1 of 71  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 11-Nov-2022 15:30 <b>Date Analysis Commenced</b> : 14-Nov-2022 <b>Issue Date</b> : 09-Dec-2022 17:07
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	Senior Organic Chemist	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Positive 'PFOS' result for sample #78 confirmed by re-extraction and re-analysis
- Amendment (06/12/2022): This report has been amended to allow a change in sampling date and time for sample 068. All analysis results are as per the previous report.
- Amendment (09/12/2022): This report has been amended following a change to the EP231X: MeFOSAA result reported for sample 09\_QC30908\_221110 (ES2240971-148) due to an analyst error. All details and a full investigation will be detailed in corrective action request 22SYC158.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_22110 8	0908_MW106S_22110 8	0908_MW107D_22111 1	0908_MW107S_22111 1	0908_MW108D_22111 0
Sampling date / time				08-Nov-2022 15:55	08-Nov-2022 15:48	11-Nov-2022 11:15	11-Nov-2022 11:11	10-Nov-2022 10:23
Compound	CAS Number	LOR	Unit	ES2240971-001 Result	ES2240971-002 Result	ES2240971-003 Result	ES2240971-004 Result	ES2240971-005 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	<0.02	<0.02	<0.02	0.03
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	0.02	<0.02	<0.02	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.78	0.25	<0.01	<0.01	0.36
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.48	0.03	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	0.04	<0.02	<0.02	0.04
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_22110 8	0908_MW106S_22110 8	0908_MW107D_22111 1	0908_MW107S_22111 1	0908_MW108D_22111 0
Sampling date / time				08-Nov-2022 15:55	08-Nov-2022 15:48	11-Nov-2022 11:15	11-Nov-2022 11:11	10-Nov-2022 10:23
Compound	CAS Number	LOR	Unit	ES2240971-001 Result	ES2240971-002 Result	ES2240971-003 Result	ES2240971-004 Result	ES2240971-005 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.52</b>	<b>0.35</b>	<0.01	<0.01	<b>0.47</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.26</b>	<b>0.28</b>	<0.01	<0.01	<b>0.36</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.44</b>	<b>0.33</b>	<0.01	<0.01	<b>0.43</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>90.2</b>	<b>92.0</b>	<b>91.8</b>	<b>100</b>	<b>106</b>
13C8-PFOA	----	0.02	%	<b>98.6</b>	<b>97.1</b>	<b>92.0</b>	<b>102</b>	<b>104</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_22111 0	0908_MW109D_22111 0	0908_MW118_221107	0908_MW121_221108	0908_MW122_221110
Sampling date / time				10-Nov-2022 10:16	10-Nov-2022 09:30	07-Nov-2022 12:39	08-Nov-2022 11:59	10-Nov-2022 15:11
Compound	CAS Number	LOR	Unit	ES2240971-006 Result	ES2240971-007 Result	ES2240971-008 Result	ES2240971-009 Result	ES2240971-010 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.33	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.48	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.55	7.94	<0.01	<0.01	0.03
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.13	0.64	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.66	26.4	<0.01	0.02	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.2	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.27	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.92	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.22	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.76	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_22111 0	0908_MW109D_22111 0	0908_MW118_221107	0908_MW121_221108	0908_MW122_221110
Sampling date / time				10-Nov-2022 10:16	10-Nov-2022 09:30	07-Nov-2022 12:39	08-Nov-2022 11:59	10-Nov-2022 15:11
Compound	CAS Number	LOR	Unit	ES2240971-006 Result	ES2240971-007 Result	ES2240971-008 Result	ES2240971-009 Result	ES2240971-010 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	2.48	38.2	<0.01	0.02	0.03
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.21	34.3	<0.01	0.02	0.03
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.31	37.0	<0.01	0.02	0.03
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	109	94.0	109	103	95.8
13C8-PFOA	----	0.02	%	105	102	100	100	105



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW124_221109	0908_MW125D_221109	0908_MW125S_221109	0908_MW123_221108	0908_MW126S_221109
Sampling date / time				09-Nov-2022 08:34	09-Nov-2022 09:17	09-Nov-2022 09:05	08-Nov-2022 11:25	09-Nov-2022 12:29	
Compound	CAS Number	LOR	Unit	ES2240971-011	ES2240971-012	ES2240971-013	ES2240971-014	ES2240971-015	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.02	0.70	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.85	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.33	10.3	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.02	0.79	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.40	7.02	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.2	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.38	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.04	2.61	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.31	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.45	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW124_221109	0908_MW125D_221109	0908_MW125S_221109	0908_MW123_221108	0908_MW126S_221109
					9	9		9
Sampling date / time				09-Nov-2022 08:34	09-Nov-2022 09:17	09-Nov-2022 09:05	08-Nov-2022 11:25	09-Nov-2022 12:29
Compound	CAS Number	LOR	Unit	ES2240971-011	ES2240971-012	ES2240971-013	ES2240971-014	ES2240971-015
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.86	23.6
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.73	17.3
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.81	22.0
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	91.8	98.1	88.7	97.9	98.3
13C8-PFOA	----	0.02	%	96.9	102	97.8	110	102



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW128D_22110 7	0908_MW128S_22110 7	0908_MW130D_22110 8	0908_MW130S_22110 8	0908_MW132D_22110 8
Sampling date / time				07-Nov-2022 12:30	07-Nov-2022 12:18	08-Nov-2022 13:34	08-Nov-2022 13:25	08-Nov-2022 13:07
Compound	CAS Number	LOR	Unit	ES2240971-016 Result	ES2240971-017 Result	ES2240971-018 Result	ES2240971-019 Result	ES2240971-020 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.70
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.10
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.44
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.07
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.04
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW128D_22110 7	0908_MW128S_22110 7	0908_MW130D_22110 8	0908_MW130S_22110 8	0908_MW132D_22110 8
Sampling date / time				07-Nov-2022 12:30	07-Nov-2022 12:18	08-Nov-2022 13:34	08-Nov-2022 13:25	08-Nov-2022 13:07
Compound	CAS Number	LOR	Unit	ES2240971-016 Result	ES2240971-017 Result	ES2240971-018 Result	ES2240971-019 Result	ES2240971-020 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.02	1.39
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	1.14
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.02	1.25
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	93.3	103	89.4	95.9	90.2
13C8-PFOA	----	0.02	%	102	107	99.7	112	98.6



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132S_22110 8	0908_MW146AD_221 109	0908_MW146S_22110 9	0908_MW156D_22110 8	0908_MW160_221108
Sampling date / time				08-Nov-2022 13:11	09-Nov-2022 10:36	09-Nov-2022 10:26	08-Nov-2022 11:06	08-Nov-2022 14:04
Compound	CAS Number	LOR	Unit	ES2240971-021	ES2240971-022	ES2240971-023	ES2240971-024	ES2240971-025
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.24	0.10	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132S_22110 8	0908_MW146AD_221 109	0908_MW146S_22110 9	0908_MW156D_22110 8	0908_MW160_221108
Sampling date / time				08-Nov-2022 13:11	09-Nov-2022 10:36	09-Nov-2022 10:26	08-Nov-2022 11:06	08-Nov-2022 14:04
Compound	CAS Number	LOR	Unit	ES2240971-021	ES2240971-022	ES2240971-023	ES2240971-024	ES2240971-025
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.29	0.10	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.29	0.10	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.29	0.10	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	96.8	93.6	91.5	94.0	106
13C8-PFOA	----	0.02	%	101	101	96.5	102	99.8





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_22110 7	0908_MW162S_22110 7	0908_MW163_221107	0908_MW167_221109	0908_MW168_221109
Sampling date / time				07-Nov-2022 11:14	07-Nov-2022 11:26	07-Nov-2022 11:46	09-Nov-2022 14:25	09-Nov-2022 14:28
Compound	CAS Number	LOR	Unit	ES2240971-026 Result	ES2240971-027 Result	ES2240971-028 Result	ES2240971-030 Result	ES2240971-031 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.18	0.80
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.14
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	22.8	4.24
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.05
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.29
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.05
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.18
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_22110 7	0908_MW162S_22110 7	0908_MW163_221107	0908_MW167_221109	0908_MW168_221109
Sampling date / time				07-Nov-2022 11:14	07-Nov-2022 11:26	07-Nov-2022 11:46	09-Nov-2022 14:25	09-Nov-2022 14:28
Compound	CAS Number	LOR	Unit	ES2240971-026 Result	ES2240971-027 Result	ES2240971-028 Result	ES2240971-030 Result	ES2240971-031 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	23.0	5.78
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	23.0	5.04
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	23.0	5.61
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	92.7	96.1	97.2	87.6	96.7
13C8-PFOA	----	0.02	%	105	101	99.1	99.9	106



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169D_22110 9	0908_MW169S_22110 9	0908_MW172_221110	0908_MW175D_22111 0	0908_MW178_221109
Sampling date / time				09-Nov-2022 14:07	09-Nov-2022 13:57	10-Nov-2022 11:04	10-Nov-2022 10:05	09-Nov-2022 12:02
Compound	CAS Number	LOR	Unit	ES2240971-032 Result	ES2240971-033 Result	ES2240971-034 Result	ES2240971-035 Result	ES2240971-036 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.03	0.07	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.04	0.13	0.08
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.12	0.15	0.48	1.13	0.30
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.07	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.06	0.08	0.02	4.43	0.11
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.05	0.03	0.08	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.15	0.08	0.29	0.08
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	0.01	0.07	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169D_22110 9	0908_MW169S_22110 9	0908_MW172_221110	0908_MW175D_22111 0	0908_MW178_221109
Sampling date / time				09-Nov-2022 14:07	09-Nov-2022 13:57	10-Nov-2022 11:04	10-Nov-2022 10:05	09-Nov-2022 12:02
Compound	CAS Number	LOR	Unit	ES2240971-032	ES2240971-033	ES2240971-034	ES2240971-035	ES2240971-036
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.21	0.44	0.69	6.31	0.65
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.18	0.23	0.50	5.56	0.41
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.21	0.44	0.65	6.11	0.57
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	94.6	98.2	100	105	87.8
13C8-PFOA	----	0.02	%	102	98.5	101	104	109



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_22111 0	0908_MW179S_22111 0	0908_MW196_221109	0908_MW198_221109	0908_MW202D_22111 0
Sampling date / time				10-Nov-2022 12:13	10-Nov-2022 12:03	09-Nov-2022 08:59	09-Nov-2022 08:34	10-Nov-2022 12:32
Compound	CAS Number	LOR	Unit	ES2240971-037 Result	ES2240971-038 Result	ES2240971-039 Result	ES2240971-040 Result	ES2240971-041 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	<0.02	<0.02	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.12	0.02	<0.02	0.15	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.86	0.61	0.25	2.64	0.09
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	<0.02	0.04	0.11	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.28	0.19	3.83	4.39	0.14
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.05	0.08	<0.02	0.03	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	0.15	0.05	0.11	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.12	0.06	0.08	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179D_22111 0	0908_MW179S_22111 0	0908_MW196_221109	0908_MW198_221109	0908_MW202D_22111 0
Sampling date / time				10-Nov-2022 12:13	10-Nov-2022 12:03	09-Nov-2022 08:59	09-Nov-2022 08:34	10-Nov-2022 12:32
Compound	CAS Number	LOR	Unit	ES2240971-037 Result	ES2240971-038 Result	ES2240971-039 Result	ES2240971-040 Result	ES2240971-041 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.68	1.19	4.23	7.55	0.23
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.14	0.80	4.08	7.03	0.23
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.53	1.17	4.19	7.29	0.23
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	105	95.5	99.6	95.5	96.0
13C8-PFOA	----	0.02	%	106	109	92.0	94.9	97.3



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW202S_22111 0	0908_MW212_221111	0908_MW232D_22110 8	0908_MW232S_22110 8	0908_MW240D_22111 0
Sampling date / time				10-Nov-2022 12:22	11-Nov-2022 08:52	08-Nov-2022 08:59	08-Nov-2022 09:03	10-Nov-2022 09:50
Compound	CAS Number	LOR	Unit	ES2240971-042 Result	ES2240971-044 Result	ES2240971-045 Result	ES2240971-046 Result	ES2240971-047 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.34</b>	<b>0.01</b>	<0.01	<0.01	<b>0.06</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.44</b>	<b>0.24</b>	<b>0.18</b>	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.05</b>	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.02</b>	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW202S_22111 0	0908_MW212_221111	0908_MW232D_22110 8	0908_MW232S_22110 8	0908_MW240D_22111 0
Sampling date / time				10-Nov-2022 12:22	11-Nov-2022 08:52	08-Nov-2022 08:59	08-Nov-2022 09:03	10-Nov-2022 09:50
Compound	CAS Number	LOR	Unit	ES2240971-042 Result	ES2240971-044 Result	ES2240971-045 Result	ES2240971-046 Result	ES2240971-047 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.85</b>	<b>0.25</b>	<b>0.18</b>	<0.01	<b>0.06</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.78</b>	<b>0.25</b>	<b>0.18</b>	<0.01	<b>0.06</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.85</b>	<b>0.25</b>	<b>0.18</b>	<0.01	<b>0.06</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>106</b>	<b>104</b>	<b>97.2</b>	<b>102</b>	<b>88.1</b>
13C8-PFOA	----	0.02	%	<b>98.0</b>	<b>96.4</b>	<b>91.6</b>	<b>101</b>	<b>99.8</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_22111 0	0908_MW241S_22111 0	0908_MW244D_22110 9	0908_MW244S_22110 9	0908_MW247D_22110 8
Sampling date / time				10-Nov-2022 15:04	10-Nov-2022 14:55	09-Nov-2022 09:34	09-Nov-2022 09:22	08-Nov-2022 14:52
Compound	CAS Number	LOR	Unit	ES2240971-048 Result	ES2240971-049 Result	ES2240971-050 Result	ES2240971-051 Result	ES2240971-052 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.03
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.07
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_22111 0	0908_MW241S_22111 0	0908_MW244D_22110 9	0908_MW244S_22110 9	0908_MW247D_22110 8
Sampling date / time				10-Nov-2022 15:04	10-Nov-2022 14:55	09-Nov-2022 09:34	09-Nov-2022 09:22	08-Nov-2022 14:52
Compound	CAS Number	LOR	Unit	ES2240971-048 Result	ES2240971-049 Result	ES2240971-050 Result	ES2240971-051 Result	ES2240971-052 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.13
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.10
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.02	0.13
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	95.8	97.1	104	105	99.9
13C8-PFOA	----	0.02	%	103	101	94.7	92.0	93.7



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW247S_22110 8	0908_MW256D_22110 7	0908_MW256S_22110 7	0908_MW257D_22110 7	0908_MW257S_22110 7
Sampling date / time				08-Nov-2022 14:55	07-Nov-2022 13:33	07-Nov-2022 13:53	07-Nov-2022 14:14	07-Nov-2022 14:25
Compound	CAS Number	LOR	Unit	ES2240971-053 Result	ES2240971-054 Result	ES2240971-055 Result	ES2240971-056 Result	ES2240971-057 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.86	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.46	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.12	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	<0.01	0.02	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW247S_22110 8	0908_MW256D_22110 7	0908_MW256S_22110 7	0908_MW257D_22110 7	0908_MW257S_22110 7
Sampling date / time				08-Nov-2022 14:55	07-Nov-2022 13:33	07-Nov-2022 13:53	07-Nov-2022 14:14	07-Nov-2022 14:25
Compound	CAS Number	LOR	Unit	ES2240971-053 Result	ES2240971-054 Result	ES2240971-055 Result	ES2240971-056 Result	ES2240971-057 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.61</b>	<0.01	<0.01	<b>0.02</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.32</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.54</b>	<0.01	<0.01	<b>0.02</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>103</b>	<b>96.7</b>	<b>97.9</b>	<b>108</b>	<b>102</b>
13C8-PFOA	----	0.02	%	<b>102</b>	<b>94.0</b>	<b>96.0</b>	<b>91.5</b>	<b>94.1</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_22110 7	0908_MW258S_22110 7	0908_MW260D_22110 8	0908_MW260S_22110 8	0908_MW263D_22110 8
Sampling date / time				07-Nov-2022 15:31	07-Nov-2022 15:11	08-Nov-2022 09:46	08-Nov-2022 09:33	08-Nov-2022 08:37
Compound	CAS Number	LOR	Unit	ES2240971-058 Result	ES2240971-059 Result	ES2240971-060 Result	ES2240971-061 Result	ES2240971-062 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.05	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_22110 7	0908_MW258S_22110 7	0908_MW260D_22110 8	0908_MW260S_22110 8	0908_MW263D_22110 8
Sampling date / time				07-Nov-2022 15:31	07-Nov-2022 15:11	08-Nov-2022 09:46	08-Nov-2022 09:33	08-Nov-2022 08:37
Compound	CAS Number	LOR	Unit	ES2240971-058 Result	ES2240971-059 Result	ES2240971-060 Result	ES2240971-061 Result	ES2240971-062 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.07	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.7	106	97.3	113	98.6
13C8-PFOA	----	0.02	%	95.4	89.5	91.8	88.7	90.8



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_22110 8	0908_MW278D_22110 9	0908_MW278S_22110 9	0908_MW279S_22110 7	0908_MW280S_22111 1
Sampling date / time				08-Nov-2022 08:27	09-Nov-2022 11:43	09-Nov-2022 11:51	07-Nov-2022 13:32	11-Nov-2022 10:45
Compound	CAS Number	LOR	Unit	ES2240971-063 Result	ES2240971-064 Result	ES2240971-065 Result	ES2240971-066 Result	ES2240971-067 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.05	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.53	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.18	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.12	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_22110 8	0908_MW278D_22110 9	0908_MW278S_22110 9	0908_MW279S_22110 7	0908_MW280S_22111 1
Sampling date / time				08-Nov-2022 08:27	09-Nov-2022 11:43	09-Nov-2022 11:51	07-Nov-2022 13:32	11-Nov-2022 10:45
Compound	CAS Number	LOR	Unit	ES2240971-063 Result	ES2240971-064 Result	ES2240971-065 Result	ES2240971-066 Result	ES2240971-067 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.93</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.71</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.88</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>110</b>	<b>99.3</b>	<b>104</b>	<b>98.6</b>	<b>108</b>
13C8-PFOA	----	0.02	%	<b>91.4</b>	<b>89.1</b>	<b>86.6</b>	<b>89.9</b>	<b>82.9</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_22111 0	0908_MW282S_22111 0	0908_MW315D_22111 1	0908_MW315S_22111 1	0908_MW316D_22110 7
Sampling date / time				10-Nov-2022 10:21	10-Nov-2022 10:08	11-Nov-2022 09:40	11-Nov-2022 09:50	07-Nov-2022 11:35
Compound	CAS Number	LOR	Unit	ES2240971-068 Result	ES2240971-069 Result	ES2240971-070 Result	ES2240971-071 Result	ES2240971-072 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.29	<0.02	0.04	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.44	<0.02	0.05	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	11.5	0.08	0.12	0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	2.55	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	41.4	0.03	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.14	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.94	<0.02	0.07	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.29	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	2.97	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_22111 0	0908_MW282S_22111 0	0908_MW315D_22111 1	0908_MW315S_22111 1	0908_MW316D_22110 7
Sampling date / time				10-Nov-2022 10:21	10-Nov-2022 10:08	11-Nov-2022 09:40	11-Nov-2022 09:50	07-Nov-2022 11:35
Compound	CAS Number	LOR	Unit	ES2240971-068 Result	ES2240971-069 Result	ES2240971-070 Result	ES2240971-071 Result	ES2240971-072 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	60.5	0.11	0.28	0.02	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	52.9	0.11	0.12	0.02	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	57.5	0.11	0.23	0.02	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	98.5	106	105	106	102
13C8-PFOA	----	0.02	%	87.2	86.9	85.4	82.2	85.0



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW318D_22110 8	0908_MW318S_22110 8	0908_MW433_221108	0908_MW466_221110	0908_MW468_221110
Sampling date / time				08-Nov-2022 13:33	08-Nov-2022 13:48	08-Nov-2022 11:09	10-Nov-2022 09:55	10-Nov-2022 09:43
Compound	CAS Number	LOR	Unit	ES2240971-073 Result	ES2240971-074 Result	ES2240971-075 Result	ES2240971-076 Result	ES2240971-077 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.09	<0.02	<0.02	0.17	0.21
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	<0.02	<0.02	0.30	0.34
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.17	<0.01	0.01	5.72	6.57
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.76	0.68
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.02	19.1	27.1
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	0.07	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.1	0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	<0.02	<0.02	0.18	0.23
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.11	<0.02	<0.02	0.75	0.94
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.20	0.21
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.63	0.53
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW318D_22110 8	0908_MW318S_22110 8	0908_MW433_221108	0908_MW466_221110	0908_MW468_221110
Sampling date / time				08-Nov-2022 13:33	08-Nov-2022 13:48	08-Nov-2022 11:09	10-Nov-2022 09:55	10-Nov-2022 09:43
Compound	CAS Number	LOR	Unit	ES2240971-073 Result	ES2240971-074 Result	ES2240971-075 Result	ES2240971-076 Result	ES2240971-077 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<b>0.06</b>	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.48</b>	<0.01	<b>0.03</b>	<b>28.1</b>	<b>37.0</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.17</b>	<0.01	<b>0.03</b>	<b>24.8</b>	<b>33.7</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.39</b>	<0.01	<b>0.03</b>	<b>26.9</b>	<b>36.0</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>93.0</b>	<b>101</b>	<b>104</b>	<b>110</b>	<b>110</b>
13C8-PFOA	----	0.02	%	<b>87.1</b>	<b>86.8</b>	<b>83.8</b>	<b>79.0</b>	<b>91.5</b>



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW829_221108	0908_QC100_221107	0908_QC106_221107	0908_QC110_221108	0908_QC112_221109
				Sampling date / time	08-Nov-2022 14:03	07-Nov-2022 13:54	07-Nov-2022 15:32	08-Nov-2022 11:58	09-Nov-2022 11:42
Compound	CAS Number	LOR	Unit	ES2240971-078	ES2240971-126	ES2240971-129	ES2240971-133	ES2240971-135	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.01</b>	<0.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.01</b>	<0.01	<0.01	<b>0.02</b>	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<b>0.02</b>	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW829_221108	0908_QC100_221107	0908_QC106_221107	0908_QC110_221108	0908_QC112_221109
Sampling date / time				08-Nov-2022 14:03	07-Nov-2022 13:54	07-Nov-2022 15:32	08-Nov-2022 11:58	09-Nov-2022 11:42	
Compound	CAS Number	LOR	Unit	ES2240971-078	ES2240971-126	ES2240971-129	ES2240971-133	ES2240971-135	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	0.01	<0.01	0.02	0.03	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	<0.01	<0.01	0.03	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	<0.01	0.02	0.03	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	96.9	101	97.3	97.0	102	
13C8-PFOA	----	0.02	%	96.5	88.1	83.6	85.7	87.5	



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC113_221109	0908_QC115_221110	0908_MW126D_22110 9	0908_QC105_221110	0908_QC103_221110
Sampling date / time				09-Nov-2022 14:06	10-Nov-2022 14:52	09-Nov-2022 12:16	10-Nov-2022 11:04	10-Nov-2022 10:21
Compound	CAS Number	LOR	Unit	ES2240971-136	ES2240971-138	ES2240971-155	ES2240971-156	ES2240971-157
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	<0.02	<0.02	0.03	0.34
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	<0.02	<0.02	0.05	0.47
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.19	<0.01	<0.01	0.54	12.9
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	4.61
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	<0.01	<0.01	0.04	50.0
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.02	0.18
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	<0.02	<0.02	0.09	1.06
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.26
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.01	3.79
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC113_221109	0908_QC115_221110	0908_MW126D_221109	0908_QC105_221110	0908_QC103_221110
						9		
Sampling date / time				09-Nov-2022 14:06	10-Nov-2022 14:52	09-Nov-2022 12:16	10-Nov-2022 11:04	10-Nov-2022 10:21
Compound	CAS Number	LOR	Unit	ES2240971-136	ES2240971-138	ES2240971-155	ES2240971-156	ES2240971-157
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.37	<0.01	<0.01	0.78	73.7
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.27	<0.01	<0.01	0.58	62.9
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.35	<0.01	<0.01	0.73	68.6
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	106	97.2	97.5	98.0	101
13C8-PFOA	----	0.02	%	86.1	87.9	99.5	97.7	94.9





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_QC101\_221110

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Compound		CAS Number	LOR	Unit	Sampling date / time	Result	Result	Result	Result
					10-Nov-2022 09:50	----	----	----	----
					ES2240971-158	-----	-----	-----	-----
					Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)		375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)		2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)		355-46-4	0.01	µg/L	<b>0.09</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)		375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)		1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)		335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)		375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)		2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)		307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)		375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)		335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)		375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)		335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)		2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)		307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)		72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)		376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)		754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)		31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)		4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_QC101_221110		----	----	----	----
		Sampling date / time	10-Nov-2022 09:50		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2240971-158	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.09</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.09</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.09</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>105</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>97.8</b>	----	----	----	----



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_MW166_221109	0908_QC300_221107	0908_QC301_221107	0908_QC302_221107	0908_QC303_221107
Sampling date / time				09-Nov-2022 15:05	07-Nov-2022 15:43	07-Nov-2022 14:49	07-Nov-2022 15:45	07-Nov-2022 14:48	
Compound	CAS Number	LOR	Unit	ES2240971-029	ES2240971-139	ES2240971-140	ES2240971-141	ES2240971-142	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.84	<0.01	<0.01	<0.01	<0.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.08	<0.02	<0.02	<0.02	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	6.74	<0.01	<0.01	<0.01	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.14	<0.02	<0.02	<0.02	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	<0.01	<0.01	<0.01	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_MW166_221109	0908_QC300_221107	0908_QC301_221107	0908_QC302_221107	0908_QC303_221107
Sampling date / time				09-Nov-2022 15:05	07-Nov-2022 15:43	07-Nov-2022 14:49	07-Nov-2022 15:45	07-Nov-2022 14:48	
Compound	CAS Number	LOR	Unit	ES2240971-029	ES2240971-139	ES2240971-140	ES2240971-141	ES2240971-142	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	7.95	<0.01	<0.01	<0.01	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	7.58	<0.01	<0.01	<0.01	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	7.85	<0.01	<0.01	<0.01	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	96.2	88.6	94.8	87.3	95.6	
13C8-PFOA	----	0.02	%	107	96.8	100	95.9	98.2	





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC304_221108	0908_QC305_221108	0908_QC306_221108	0908_QC307_221109	0908_QC308_221109
Sampling date / time				08-Nov-2022 17:00	08-Nov-2022 14:55	08-Nov-2022 17:37	09-Nov-2022 15:04	09-Nov-2022 15:05	
Compound	CAS Number	LOR	Unit	ES2240971-143	ES2240971-144	ES2240971-145	ES2240971-146	ES2240971-147	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	83.9	89.1	92.0	93.8	93.9	
13C8-PFOA	----	0.02	%	98.9	98.7	98.6	97.7	104	





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC309_221110	0908_QC310_221109	0908_QC311_221110	0908_QC312_221110	0908_QC313_221111
Sampling date / time					10-Nov-2022 17:00	09-Nov-2022 15:05	10-Nov-2022 17:00	10-Nov-2022 15:54	11-Nov-2022 14:04
Compound	CAS Number	LOR	Unit	ES2240971-148	ES2240971-149	ES2240971-150	ES2240971-151	ES2240971-152	ES2240971-152
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	94.6	94.1	101	94.1	96.0	96.0
13C8-PFOA	----	0.02	%	98.0	101	102	101	99.5	99.5





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID		0908_QC314_221110	----	----	----	----
		Sampling date / time		10-Nov-2022 15:54	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2240971-153	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID	0908_QC314_221110	----	----	----	----
		Sampling date / time	10-Nov-2022 15:54	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2240971-153	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	103	----	----	----
13C8-PFOA	----	0.02	%	100	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_221108	0908_SD005_221108	0908_SD007_221108	0908_SD009_221108	0908_SD014_221107
Sampling date / time				08-Nov-2022 15:39	08-Nov-2022 09:09	08-Nov-2022 14:43	08-Nov-2022 15:15	07-Nov-2022 14:55	
Compound	CAS Number	LOR	Unit	ES2240971-079	ES2240971-080	ES2240971-082	ES2240971-083	ES2240971-084	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	78.4	55.4	26.2	23.4	76.9	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0006	0.0002	<0.0002	0.0005	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0082	0.0023	0.0009	0.0013	0.0020	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0936	0.0417	0.0088	0.0133	0.0508	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.0012	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0012	0.0020	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0006	0.0004	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0011	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0012	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0013	<0.0002	<0.0002	0.0005	0.0011	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_221108	0908_SD005_221108	0908_SD007_221108	0908_SD009_221108	0908_SD014_221107
Sampling date / time				08-Nov-2022 15:39	08-Nov-2022 09:09	08-Nov-2022 14:43	08-Nov-2022 15:15	07-Nov-2022 14:55	
Compound	CAS Number	LOR	Unit	ES2240971-079	ES2240971-080	ES2240971-082	ES2240971-083	ES2240971-084	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.107	0.0489	0.0097	0.0159	0.0544	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.102	0.0440	0.0097	0.0146	0.0528	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.104	0.0489	0.0097	0.0151	0.0528	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	79.0	92.5	85.5	85.0	82.5	
13C8-PFOA	----	0.0002	%	104	100	104	104	97.5	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD023_221108	0908_SD024_221108	0908_SD047_221110	0908_SD048_221110	0908_SD055_221110
				Sampling date / time	08-Nov-2022 10:59	08-Nov-2022 10:12	10-Nov-2022 11:56	10-Nov-2022 11:41	10-Nov-2022 10:42
Compound	CAS Number	LOR	Unit		ES2240971-085	ES2240971-086	ES2240971-087	ES2240971-088	ES2240971-089
				Result	Result	Result	Result	Result	Result
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%		<b>64.0</b>	<b>74.3</b>	<b>17.5</b>	<b>48.5</b>	<b>38.3</b>
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<b>0.0002</b>	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		<b>0.0009</b>	<b>0.0059</b>	<b>0.0010</b>	<b>0.0040</b>	<b>0.0054</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	<0.0002	<b>0.0002</b>	<0.0002	<b>0.0002</b>
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<b>0.0186</b>	<b>0.0840</b>	<b>0.0264</b>	<b>0.0103</b>	<b>0.0323</b>
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<b>0.0022</b>
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<b>0.0010</b>	<b>0.0002</b>
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	<b>0.0003</b>	<0.0002	<b>0.0013</b>	<b>0.0005</b>
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<b>0.0006</b>	<b>0.0003</b>
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<b>0.0003</b>
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	<0.0002	<0.0002	<b>0.0009</b>
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD023_221108	0908_SD024_221108	0908_SD047_221110	0908_SD048_221110	0908_SD055_221110
Sampling date / time				08-Nov-2022 10:59	08-Nov-2022 10:12	10-Nov-2022 11:56	10-Nov-2022 11:41	10-Nov-2022 10:42	
Compound	CAS Number	LOR	Unit	ES2240971-085	ES2240971-086	ES2240971-087	ES2240971-088	ES2240971-089	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0195	0.0902	0.0276	0.0174	0.0423	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0195	0.0899	0.0274	0.0143	0.0377	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0195	0.0902	0.0274	0.0172	0.0387	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	74.0	110	85.5	86.5	102	
13C8-PFOA	----	0.0002	%	100	99.0	99.0	114	102	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD059_221109	0908_SD062_221107	0908_SD079_221107	0908_SD081_221108	0908_SD108_221110
				Sampling date / time	09-Nov-2022 09:29	07-Nov-2022 14:29	07-Nov-2022 12:50	08-Nov-2022 09:31	10-Nov-2022 11:34
Compound	CAS Number	LOR	Unit	ES2240971-090	ES2240971-092	ES2240971-093	ES2240971-094	ES2240971-095	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	20.1	25.9	83.8	73.2	57.0	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0070	0.0004	0.0079	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0003	0.0008	0.0483	0.0005	0.114	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0066	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0010	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0081	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD059_221109	0908_SD062_221107	0908_SD079_221107	0908_SD081_221108	0908_SD108_221110
Sampling date / time				09-Nov-2022 09:29	07-Nov-2022 14:29	07-Nov-2022 12:50	08-Nov-2022 09:31	10-Nov-2022 11:34	
Compound	CAS Number	LOR	Unit	ES2240971-090	ES2240971-092	ES2240971-093	ES2240971-094	ES2240971-095	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0003	0.0008	0.0553	0.0009	0.139	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0003	0.0008	0.0553	0.0009	0.122	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0003	0.0008	0.0553	0.0009	0.123	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	84.5	81.0	118	83.0	75.0	
13C8-PFOA	----	0.0002	%	100	100	120	90.5	108	





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD110_221110	0908_QC102_221107	0908_QC104_221107	----	----
		Sampling date / time		10-Nov-2022 11:20	07-Nov-2022 14:42	07-Nov-2022 14:55	----	----
Compound	CAS Number	LOR	Unit	ES2240971-096	ES2240971-127	ES2240971-128	-----	-----
				Result	Result	Result	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>31.0</b>	<b>30.4</b>	<b>75.3</b>	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<b>0.0007</b>	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<b>0.0005</b>	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0170</b>	<b>0.0005</b>	<b>0.0020</b>	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<b>0.0007</b>	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0967</b>	<b>0.0026</b>	<b>0.0255</b>	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0013</b>	<0.0002	<0.0002	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<b>0.001</b>	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<b>0.0023</b>	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<b>0.0020</b>	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<b>0.0004</b>	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<b>0.0006</b>	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<b>0.0054</b>	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD110_221110	0908_QC102_221107	0908_QC104_221107	----	----
Sampling date / time				10-Nov-2022 11:20	07-Nov-2022 14:42	07-Nov-2022 14:55	----	----	
Compound	CAS Number	LOR	Unit	ES2240971-096	ES2240971-127	ES2240971-128	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.129	0.0031	0.0275	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.114	0.0031	0.0275	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.121	0.0031	0.0275	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	73.5	83.0	99.0	----	----	
13C8-PFOA	----	0.0002	%	86.5	106	106	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SD006_221108	0908_SD060_221109	0908_SS101_221107	0908_SS102_221107	0908_SS103_221107
Sampling date / time				08-Nov-2022 14:57	09-Nov-2022 12:35	07-Nov-2022 14:42	07-Nov-2022 12:18	07-Nov-2022 12:04	
Compound	CAS Number	LOR	Unit	ES2240971-081	ES2240971-091	ES2240971-097	ES2240971-098	ES2240971-099	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	62.6	34.9	32.6	34.3	39.6	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0034	0.0034	0.0003	0.0060	0.0029	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.0004	<0.0002	0.0006	0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.336	0.0149	0.0030	0.0408	0.0194	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0002	0.0007	<0.0002	0.0009	0.0012	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0003	<0.0002	0.0003	0.0009	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0019	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SD006_221108	0908_SD060_221109	0908_SS101_221107	0908_SS102_221107	0908_SS103_221107
Sampling date / time				08-Nov-2022 14:57	09-Nov-2022 12:35	07-Nov-2022 14:42	07-Nov-2022 12:18	07-Nov-2022 12:04	
Compound	CAS Number	LOR	Unit	ES2240971-081	ES2240971-091	ES2240971-097	ES2240971-098	ES2240971-099	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.346	0.0202	0.0033	0.0486	0.0250	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.339	0.0183	0.0033	0.0468	0.0223	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.340	0.0195	0.0033	0.0480	0.0248	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	89.0	105	102	83.5	110	
13C8-PFOA	----	0.0002	%	109	102	97.0	102	114	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS104_221110	0908_SS105_221110	0908_SS106_221107	0908_SS107_221110	0908_SS108_221109
Sampling date / time				10-Nov-2022 14:44	10-Nov-2022 14:34	07-Nov-2022 14:10	10-Nov-2022 14:15	09-Nov-2022 09:48	
Compound	CAS Number	LOR	Unit	ES2240971-100	ES2240971-101	ES2240971-102	ES2240971-103	ES2240971-104	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	6.0	5.2	25.9	11.0	6.7	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.0007	0.0016	0.0011	0.0046	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS104_221110	0908_SS105_221110	0908_SS106_221107	0908_SS107_221110	0908_SS108_221109
Sampling date / time				10-Nov-2022 14:44	10-Nov-2022 14:34	07-Nov-2022 14:10	10-Nov-2022 14:15	09-Nov-2022 09:48	
Compound	CAS Number	LOR	Unit	ES2240971-100	ES2240971-101	ES2240971-102	ES2240971-103	ES2240971-104	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<0.0002	0.0007	0.0016	0.0011	0.0049	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	0.0007	0.0016	0.0011	0.0049	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	0.0007	0.0016	0.0011	0.0049	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	94.5	82.0	85.5	90.5	91.0	
13C8-PFOA	----	0.0002	%	96.5	91.0	99.5	95.5	96.5	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS109_221109	0908_SS110_221107	0908_SS112_221108	0908_QC107_221108	0908_QC111_221109
Sampling date / time				09-Nov-2022 10:52	07-Nov-2022 14:35	08-Nov-2022 09:34	08-Nov-2022 15:15	09-Nov-2022 12:37	
Compound	CAS Number	LOR	Unit	ES2240971-105	ES2240971-106	ES2240971-107	ES2240971-130	ES2240971-134	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	21.1	12.2	8.2	26.3	32.8	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0008	0.0039	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0006	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0008	0.0050	0.0002	0.0062	0.0213	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS109_221109	0908_SS110_221107	0908_SS112_221108	0908_QC107_221108	0908_QC111_221109
Sampling date / time				09-Nov-2022 10:52	07-Nov-2022 14:35	08-Nov-2022 09:34	08-Nov-2022 15:15	09-Nov-2022 12:37	
Compound	CAS Number	LOR	Unit	ES2240971-105	ES2240971-106	ES2240971-107	ES2240971-130	ES2240971-134	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0010	0.0050	0.0002	0.0070	0.0277	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0008	0.0050	0.0002	0.0070	0.0252	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0008	0.0050	0.0002	0.0070	0.0267	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	106	80.5	111	95.0	85.0	
13C8-PFOA	----	0.0002	%	108	93.5	92.5	104	104	





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_MW208_221108	0908_SW001_221108	0908_SW005_221108	0908_SW006_221108	0908_SW007_221108
				Sampling date / time	08-Nov-2022 15:29	08-Nov-2022 15:35	08-Nov-2022 09:06	08-Nov-2022 14:56	08-Nov-2022 14:44
Compound	CAS Number	LOR	Unit	ES2240971-043	ES2240971-108	ES2240971-109	ES2240971-110	ES2240971-111	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.14	0.02	<0.02	0.03	0.04	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.15	0.03	<0.02	0.05	0.07	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	5.31	0.34	0.09	0.64	0.95	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.60	0.03	<0.02	0.07	0.11	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	8.30	1.46	0.24	9.92	13.9	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.14	<0.02	<0.02	0.07	0.08	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.56	0.08	0.02	0.24	0.33	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.12	<0.02	<0.02	0.04	0.05	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.39	0.03	<0.01	0.07	0.11	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_MW208_221108	0908_SW001_221108	0908_SW005_221108	0908_SW006_221108	0908_SW007_221108
				Sampling date / time	08-Nov-2022 15:29	08-Nov-2022 15:35	08-Nov-2022 09:06	08-Nov-2022 14:56	08-Nov-2022 14:44
Compound	CAS Number	LOR	Unit		ES2240971-043	ES2240971-108	ES2240971-109	ES2240971-110	ES2240971-111
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	15.8	1.99	0.35	11.1	15.6	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	13.6	1.80	0.33	10.6	14.8	
Sum of PFAS (WA DER List)	----	0.01	µg/L	15.1	1.93	0.35	11.0	15.5	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	95.8	96.3	96.6	96.4	96.1	
13C8-PFOA	----	0.02	%	92.2	92.5	92.4	91.9	94.9	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW009_221108	0908_SW014_221107	0908_SW023_221108	0908_SW024_221108	0908_SW047_221110
				Sampling date / time	08-Nov-2022 15:12	07-Nov-2022 14:56	08-Nov-2022 10:58	08-Nov-2022 10:13	10-Nov-2022 11:57
Compound	CAS Number	LOR	Unit		ES2240971-112	ES2240971-113	ES2240971-114	ES2240971-115	ES2240971-116
				Result	Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		0.04	0.02	<0.02	<0.02	0.03
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		0.06	0.02	0.02	<0.02	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		0.58	0.26	0.23	0.12	0.74
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		0.05	0.03	<0.02	<0.02	0.06
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		2.45	1.14	0.36	0.27	3.93
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		0.03	<0.02	<0.02	<0.02	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		0.14	0.06	0.06	0.03	0.11
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		0.02	<0.02	<0.02	<0.02	0.03
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		0.05	0.02	0.02	<0.01	0.08
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW009_221108	0908_SW014_221107	0908_SW023_221108	0908_SW024_221108	0908_SW047_221110
				Sampling date / time	08-Nov-2022 15:12	07-Nov-2022 14:56	08-Nov-2022 10:58	08-Nov-2022 10:13	10-Nov-2022 11:57
Compound	CAS Number	LOR	Unit		ES2240971-112	ES2240971-113	ES2240971-114	ES2240971-115	ES2240971-116
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>3.42</b>	<b>1.55</b>	<b>0.69</b>	<b>0.42</b>	<b>5.05</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>3.03</b>	<b>1.40</b>	<b>0.59</b>	<b>0.39</b>	<b>4.67</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>3.31</b>	<b>1.50</b>	<b>0.67</b>	<b>0.42</b>	<b>4.95</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>98.8</b>	<b>103</b>	<b>100</b>	<b>98.0</b>	<b>96.9</b>	
13C8-PFOA	----	0.02	%	<b>93.0</b>	<b>90.3</b>	<b>89.6</b>	<b>89.0</b>	<b>90.5</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW048_221110	0908_SW055_221110	0908_SW059_221109	0908_SW060_221109	0908_SW062_221107
Sampling date / time				10-Nov-2022 11:33	10-Nov-2022 10:36	09-Nov-2022 09:30	09-Nov-2022 12:35	07-Nov-2022 14:28	
Compound	CAS Number	LOR	Unit	ES2240971-117	ES2240971-118	ES2240971-119	ES2240971-120	ES2240971-121	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.10	0.06	0.08	0.56	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.13	0.08	0.12	0.92	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.78	0.80	0.88	6.90	0.08	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.07	0.08	0.71	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.22	3.48	1.17	16.3	0.13	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.2	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.04	0.04	0.30	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.18	0.17	0.24	1.80	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.04	0.04	0.32	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.08	0.07	0.60	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW048_221110	0908_SW055_221110	0908_SW059_221109	0908_SW060_221109	0908_SW062_221107
Sampling date / time				10-Nov-2022 11:33	10-Nov-2022 10:36	09-Nov-2022 09:30	09-Nov-2022 12:35	07-Nov-2022 14:28
Compound	CAS Number	LOR	Unit	ES2240971-117	ES2240971-118	ES2240971-119	ES2240971-120	ES2240971-121
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.56	4.82	2.72	28.6	0.21
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.00	4.28	2.05	23.2	0.21
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.39	4.67	2.52	27.0	0.21
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	101	91.8	95.6	102	102
13C8-PFOA	----	0.02	%	90.4	87.1	89.1	85.0	86.0



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW079_221107	0908_SW081_221108	0908_SW108_221110	0908_SW110_221110	0908_QC108_221108
				Sampling date / time	07-Nov-2022 12:49	08-Nov-2022 09:27	10-Nov-2022 11:32	10-Nov-2022 11:12	08-Nov-2022 09:11
Compound	CAS Number	LOR	Unit	ES2240971-122	ES2240971-123	ES2240971-124	ES2240971-125	ES2240971-131	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	<0.02	0.05	0.04	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	0.09	0.06	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.19	<0.01	1.00	1.08	0.12	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.09	0.09	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.35	<0.01	4.48	5.41	0.24	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.05	0.05	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	<0.02	0.21	0.22	0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.05	0.04	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.10	0.09	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW079_221107	0908_SW081_221108	0908_SW108_221110	0908_SW110_221110	0908_QC108_221108
Sampling date / time				07-Nov-2022 12:49	08-Nov-2022 09:27	10-Nov-2022 11:32	10-Nov-2022 11:12	08-Nov-2022 09:11	
Compound	CAS Number	LOR	Unit	ES2240971-122	ES2240971-123	ES2240971-124	ES2240971-125	ES2240971-131	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.66</b>	<0.01	<b>6.12</b>	<b>7.08</b>	<b>0.38</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.54</b>	<0.01	<b>5.48</b>	<b>6.49</b>	<b>0.36</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.62</b>	<0.01	<b>5.94</b>	<b>6.93</b>	<b>0.38</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>106</b>	<b>96.8</b>	<b>104</b>	<b>98.6</b>	<b>98.0</b>	
13C8-PFOA	----	0.02	%	<b>85.8</b>	<b>88.2</b>	<b>96.7</b>	<b>89.1</b>	<b>86.5</b>	





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_QC109_221109	0908_QC114_221110	----	----	----
		Sampling date / time		09-Nov-2022 12:35	10-Nov-2022 11:36	----	----	----
Compound	CAS Number	LOR	Unit	ES2240971-132	ES2240971-137	-----	-----	-----
				Result	Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.61	0.05	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.68	0.07	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	7.12	1.13	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.75	0.08	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	16.1	4.00	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.38	0.06	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	2.14	0.22	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.28	0.04	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.62	0.08	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_QC109_221109	0908_QC114_221110	----	----	----
		Sampling date / time		09-Nov-2022 12:35	10-Nov-2022 11:36	----	----	----
Compound	CAS Number	LOR	Unit	ES2240971-132	ES2240971-137	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	28.9	5.73	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	23.2	5.13	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	27.4	5.58	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	99.3	95.2	----	----	----
13C8-PFOA	----	0.02	%	85.4	85.6	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2240971</b>	<b>Page</b>	: 1 of 39
<b>Amendment</b>	: <b>3</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 11-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 14-Nov-2022
<b>C-O-C number</b>	: 44620	<b>Issue Date</b>	: 09-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: 0908_Williamtown		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 158		
<b>No. of samples analysed</b>	: 157		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Senior Organic Chemist	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4706529)</b>									
ES2240922-001	Anonymous	EA055: Moisture Content	----	0.1	%	1.8	2.2	22.0	No Limit
ES2240971-086	0908_SD024_221108	EA055: Moisture Content	----	0.1	%	74.3	74.2	0.2	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4706530)</b>									
ES2240971-095	0908_SD108_221110	EA055: Moisture Content	----	0.1	%	57.0	48.5	16.0	0% - 20%
ES2240971-106	0908_SS110_221107	EA055: Moisture Content	----	0.1	%	12.2	11.4	7.4	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4701005)</b>									
ES2240927-026	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0108	0.0109	0.0	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2240971-082	0908_SD007_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0009	0.0009	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0088	0.0096	7.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4701009) - continued</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0008	0.0007	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2240971-102	0908_SS106_221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0016	0.0015	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4701005)</b>									
ES2240927-026	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
		ES2240971-082	0908_SD007_221108	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4701009) - continued</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2240971-102	0908_SS106_221107	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4701005)</b>									
ES2240927-026	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2240971-082	0908_SD007_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2240971-102	0908_SS106_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4701005)</b>									
ES2240927-026	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2240971-082	0908_SD007_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4701005) - continued</b>									
ES2240971-082	0908_SD007_221108	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2240971-102	0908_SS106_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703090)</b>									
ES2240971-001	0908_MW106D_221108	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.78	0.66	16.6	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.48	0.48	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	0.04	31.5	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-011	0908_MW124_221109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703094)</b>									
ES2240971-020	0908_MW132D_221108	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.70	0.68	1.7	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.44	0.40	9.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.08	16.2	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703094) - continued</b>									
ES2240971-020	0908_MW132D_221108	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-030	0908_MW167_221109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.18	0.16	13.5	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	22.8	18.9	18.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703096)</b>									
ES2240971-039	0908_MW196_221109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.25	0.26	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.83	3.92	2.3	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-050	0908_MW244D_221109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703488)</b>									
ES2240971-058	0908_MW258D_221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-068	0908_MW281S_221110	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	11.5	11.2	2.7	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	41.4	36.9	11.5	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.29	0.29	0.0	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.44	0.44	0.0	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	2.55	2.64	3.5	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703490)</b>									
ES2240971-077	0908_MW468_221110	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	6.57	6.78	3.2	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	27.1	28.9	6.6	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.21	0.23	8.3	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.34	0.38	10.7	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.68	0.67	0.0	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703490) - continued</b>									
ES2240971-116	0908_SW047_221110	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.74	0.73	2.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.93	4.02	2.3	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703493)</b>									
ES2240971-139	0908_QC300_221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-149	0908_QC310_221109	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4703500)</b>									
ES2240971-126	0908_QC100_221107	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2240971-125	0908_SW110_221110	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.08	1.14	5.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	5.41	5.58	3.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.09	0.10	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703090)</b>									
ES2240971-001	0908_MW106D_221108	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	0.08	19.5	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703090) - continued</b>									
ES2240971-001	0908_MW106D_221108	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2240971-011	0908_MW124_221109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703094)</b>							
ES2240971-020	0908_MW132D_221108	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	0.08	13.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		ES2240971-030	0908_MW167_221109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	0.03	0.03	0.0	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703096)</b>									
ES2240971-039	0908_MW196_221109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	0.06	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703096) - continued</b>									
ES2240971-039	0908_MW196_221109	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.06	21.1	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		ES2240971-050	0908_MW244D_221109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703488)</b>									
ES2240971-058	0908_MW258D_221107	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2240971-068	0908_MW281S_221110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	2.97	2.82	5.2	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.14	0.14	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.94	0.84	10.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.29	0.28	5.8	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703488) - continued</b>											
ES2240971-068	0908_MW281S_221110	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703490)</b>											
ES2240971-077	0908_MW468_221110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.53	0.60	11.3	0% - 20%		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.23	0.26	9.0	0% - 50%		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.94	0.98	4.1	0% - 20%		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.21	0.22	0.0	0% - 50%		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	0.2	0.0	No Limit		
ES2240971-116	0908_SW047_221110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.08	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.11	0.11	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.03	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703493)</b>											
ES2240971-139	0908_QC300_221107	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		ES2240971-149	0908_QC310_221109	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703493) - continued</b>											
ES2240971-149	0908_QC310_221109	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit				
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4703500)</b>											
ES2240971-126	0908_QC100_221107	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		ES2240971-125	0908_SW110_221110	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.09	0.09	0.0	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.05	0.06	17.9	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	0.22	0.22	0.0	0% - 50%		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	0.04	0.04	0.0	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit		
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit				
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703090)</b>											
ES2240971-001	0908_MW106D_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit		



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703090) - continued</b>									
ES2240971-001	0908_MW106D_221108	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-011	0908_MW124_221109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703094)</b>									
ES2240971-020	0908_MW132D_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-030	0908_MW167_221109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit





Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703094) - continued</b>									
ES2240971-030	0908_MW167_221109	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703096)</b>									
ES2240971-039	0908_MW196_221109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-050	0908_MW244D_221109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703488)</b>									
ES2240971-058	0908_MW258D_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703488) - continued</b>									
ES2240971-058	0908_MW258D_221107	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-068	0908_MW281S_221110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703490)</b>									
ES2240971-077	0908_MW468_221110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-116	0908_SW047_221110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703490) - continued</b>									
ES2240971-116	0908_SW047_221110	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703493)</b>									
ES2240971-139	0908_QC300_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-149	0908_QC310_221109	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703500)</b>									
ES2240971-126	0908_QC100_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4703500) - continued</b>									
ES2240971-126	0908_QC100_221107	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-125	0908_SW110_221110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703090)</b>									
ES2240971-001	0908_MW106D_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-011	0908_MW124_221109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703094)</b>									
ES2240971-020	0908_MW132D_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703094) - continued</b>									
ES2240971-020	0908_MW132D_221108	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-030	0908_MW167_221109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703096)</b>									
ES2240971-039	0908_MW196_221109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-050	0908_MW244D_221109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703488)</b>									
ES2240971-058	0908_MW258D_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703488) - continued</b>									
ES2240971-068	0908_MW281S_221110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703490)</b>									
ES2240971-077	0908_MW468_221110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-116	0908_SW047_221110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703493)</b>									
ES2240971-139	0908_QC300_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-149	0908_QC310_221109	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703493) - continued</b>									
ES2240971-149	0908_QC310_221109	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4703500)</b>									
ES2240971-126	0908_QC100_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2240971-125	0908_SW110_221110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4703090)</b>									
ES2240971-001	0908_MW106D_221108	EP231X: Sum of PFAS	----	0.01	µg/L	1.52	1.36	11.1	0% - 20%
ES2240971-011	0908_MW124_221109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4703094)</b>									
ES2240971-020	0908_MW132D_221108	EP231X: Sum of PFAS	----	0.01	µg/L	1.39	1.32	5.2	0% - 20%
ES2240971-030	0908_MW167_221109	EP231X: Sum of PFAS	----	0.01	µg/L	23.0	19.1	18.6	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 4703096)</b>									
ES2240971-039	0908_MW196_221109	EP231X: Sum of PFAS	----	0.01	µg/L	4.23	4.36	3.0	0% - 20%
ES2240971-050	0908_MW244D_221109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4703488)</b>									
ES2240971-058	0908_MW258D_221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2240971-068	0908_MW281S_221110	EP231X: Sum of PFAS	----	0.01	µg/L	60.5	55.6	8.6	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 4703490)</b>									
ES2240971-077	0908_MW468_221110	EP231X: Sum of PFAS	----	0.01	µg/L	37.0	39.2	5.8	0% - 20%
ES2240971-116	0908_SW047_221110	EP231X: Sum of PFAS	----	0.01	µg/L	5.05	5.14	1.8	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 4703493)</b>									
ES2240971-139	0908_QC300_221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2240971-149	0908_QC310_221109	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4703500)</b>									
ES2240971-126	0908_QC100_221107	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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 Work Order : ES2240971 Amendment 3  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP



Sub-Matrix: **WATER**

				<i>Laboratory Duplicate (DUP) Report</i>					
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Acceptable RPD (%)</i>
<b>EP231P: PFAS Sums (QC Lot: 4703500) - continued</b>									
ES2240971-125	0908_SW110_221110	EP231X: Sum of PFAS	----	0.01	µg/L	7.08	7.34	3.6	0% - 20%





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4701005)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	59.0	134	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4701009)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4701005)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	109	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	117	69.0	133	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4701009)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	100	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.6	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	64.0	136	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4701009) - continued</b>									
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4701005)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	61.0	139	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4701009)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.9	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.4	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.0	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4701005)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.2	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	85.6	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	69.2	143	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4701009)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	103	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	80.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	123	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	69.2	143	

Sub-Matrix: **WATER**

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
	Spike	Spike Recovery (%)	Acceptable Limits (%)



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703090)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	115	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	82.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	102	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703094)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.0	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	96.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	98.8	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.6	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703096)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.8	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.0	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.8	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703488)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.0	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.4	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.8	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	90.0	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	85.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.2	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703490)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	77.2	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	79.4	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	79.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.0	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703493)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	73.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	94.4	68.0	131	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703493) - continued</b>									
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	85.0	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703500)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	79.0	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	90.8	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.0	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.0	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703090)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703094)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	105	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	109	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	119	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703096)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.9	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	86.4	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	85.6	72.0	129	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike	Spike Recovery (%)		Acceptable Limits (%)	
					Concentration	LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703096) - continued</b>									
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.0	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	81.8	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.0	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	80.3	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703488)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.7	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.8	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.6	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703490)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.6	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	90.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	89.0	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.4	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.2	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	116	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703493)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	104	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	96.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.8	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	97.2	71.0	133	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703493) - continued</b>									
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	80.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	78.0	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	110	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703500)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.0	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.4	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.2	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703090)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	115	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	100	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	104	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.1	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	118	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.8	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703094)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	100	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	120	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	129	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	122	57.6	145	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
				Result		LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703094) - continued</b>									
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703096)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	78.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.1	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.6	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	84.0	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.4	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703488)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	116	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.3	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	114	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	105	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703490)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.5	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.8	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.1	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.5	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	136	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703490) - continued</b>								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703493)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	124	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	127	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	110	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	104	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	105	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703500)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	105	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	101	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	97.5	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703090)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	83.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	77.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	102	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703094)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	120	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	109	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703096)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	85.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.8	64.0	140





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703096) - continued</b>									
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	79.0	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.6	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703488)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	83.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	88.2	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.2	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703490)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	81.4	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	84.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	76.4	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.4	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703493)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	98.2	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	103	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	122	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	113	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703500)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	101	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4701005)</b>							
ES2240927-026	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	106	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	122	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	119	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	102	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	123	59.0	134



Sub-Matrix: SOIL

				Matrix Spike (MS) Report					
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	96.4	72.0	128		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	105	73.0	123		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	100	67.0	130		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	92.8	70.0	132		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	91.2	68.0	136		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	85.6	59.0	134		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4701005)</b>									
ES2240927-026	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	111	71.0	135		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	118	69.0	132		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	112	70.0	132		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	115	71.0	131		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	121	69.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	102	72.0	129		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	111	69.0	133		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	118	64.0	136		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	117	69.0	135		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	109	66.0	139		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	116	69.0	133		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4701009)</b>									
ES2240971-092	0908_SD062_221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	101	71.0	135		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	116	69.0	132		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	109	70.0	132		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	111	71.0	131		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	112	69.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	92.0	72.0	129		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	99.2	69.0	133		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	123	64.0	136		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	122	69.0	135		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	88.0	66.0	139		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	116	69.0	133		
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4701005)</b>							
		ES2240927-026	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8			0.00312 mg/kg	105	71.6	129		
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2			0.00312 mg/kg	122	69.8	131		
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7			0.00312 mg/kg	114	68.7	130		



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4701005) - continued</b>							
ES2240927-026	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	120	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	116	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	108	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4701009)</b>							
ES2240971-092	0908_SD062_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	83.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	86.7	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	108	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	114	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	108	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	115	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	106	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4701005)</b>							
ES2240927-026	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	89.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	86.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	105	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	120	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4701009)</b>							
ES2240971-092	0908_SD062_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	114	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	90.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	101	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	94.4	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703090)</b>							
ES2240971-002	0908_MW106S_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	105	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	104	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	88.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	91.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	122	65.0	140



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703090) - continued</b>							
ES2240971-002	0908_MW106S_221108	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	96.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703094)</b>							
ES2240971-021	0908_MW132S_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	92.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	126	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	128	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	127	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	99.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703096)</b>							
ES2240971-041	0908_MW202D_221110	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	92.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	77.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	101	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	78.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	94.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703488)</b>							
ES2240971-059	0908_MW258S_221107	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	77.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	92.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	83.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	89.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	83.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	82.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703490)</b>							
ES2240971-078	0908_MW829_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	79.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	72.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	81.2	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	77.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.8	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703493)</b>							
ES2240971-143	0908_QC304_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	117	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	105	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	125	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	91.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	96.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703500)</b>							



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4703500) - continued</b>									
ES2240971-133	0908_QC110_221108	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	80.6	72.0	130		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	84.8	71.0	127		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	89.2	68.0	131		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	86.6	69.0	134		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	83.0	65.0	140		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	76.6	53.0	142		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703090)</b>									
ES2240971-002	0908_MW106S_221108	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	118	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	110	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	114	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	120	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	101	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	111	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	117	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	110	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	121	71.0	132		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703094)</b>									
ES2240971-021	0908_MW132S_221108	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	106	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	114	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	111	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	119	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	105	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	108	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	111	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	129	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	105	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	112	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703096)</b>							
		ES2240971-041	0908_MW202D_221110	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	108	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.25 µg/L	100	72.0	129		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.25 µg/L	101	72.0	130		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.25 µg/L	107	71.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.25 µg/L	112	69.0	130		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.25 µg/L	107	71.0	129		



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703096) - continued</b>									
ES2240971-041	0908_MW202D_221110	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	101	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	115	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.5	71.0	132		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703488)</b>									
ES2240971-059	0908_MW258S_221107	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	82.0	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	83.2	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	96.0	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.0	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	85.2	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	95.4	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.0	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	105	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.0	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	109	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	109	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703490)</b>							
ES2240971-078	0908_MW829_221108	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	82.9	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	77.6	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	99.8	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	96.0	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.4	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.8	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	94.0	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	101	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.0	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	117	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703493)</b>							
		ES2240971-143	0908_QC304_221108	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	102	73.0	129
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	97.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.25 µg/L	108	72.0	129		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.25 µg/L	102	72.0	130		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.25 µg/L	98.8	71.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.25 µg/L	93.2	69.0	130		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.25 µg/L	91.0	71.0	129		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.25 µg/L	115	69.0	133		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.25 µg/L	125	72.0	134		





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703493) - continued</b>							
ES2240971-143	0908_QC304_221108	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	84.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	115	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4703500)</b>							
ES2240971-133	0908_QC110_221108	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	90.1	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	98.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	104	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	82.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	77.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	91.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	112	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703090)</b>							
ES2240971-002	0908_MW106S_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	118	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	122	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	108	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	114	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	129	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	123	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	108	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703094)</b>							
ES2240971-021	0908_MW132S_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	105	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	101	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	115	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	124	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	104	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	117	65.0	136



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703094) - continued</b>							
ES2240971-021	0908_MW132S_221108	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	109	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703096)</b>							
ES2240971-041	0908_MW202D_221110	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	107	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	110	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	130	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	105	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	99.9	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	87.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	114	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703488)</b>							
ES2240971-059	0908_MW258S_221107	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	81.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	95.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	88.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	116	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	113	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703490)</b>							
ES2240971-078	0908_MW829_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	93.9	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	110	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	74.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	97.9	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703490) - continued</b>							
ES2240971-078	0908_MW829_221108	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	107	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703493)</b>							
ES2240971-143	0908_QC304_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	120	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	112	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	108	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	106	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	121	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	104	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4703500)</b>							
ES2240971-133	0908_QC110_221108	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	102	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	77.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	84.9	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	87.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	93.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703090)</b>							
ES2240971-002	0908_MW106S_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	103	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	95.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	127	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703094)</b>							
ES2240971-021	0908_MW132S_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	106	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	98.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	125	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	99.4	71.4	144



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703096)</b>							
ES2240971-041	0908_MW202D_221110	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	83.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	111	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	81.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	81.0	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703488)</b>							
ES2240971-059	0908_MW258S_221107	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	81.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	91.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	80.4	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703490)</b>							
ES2240971-078	0908_MW829_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	83.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	83.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	88.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	75.6	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703493)</b>							
ES2240971-143	0908_QC304_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	109	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	118	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4703500)</b>							
ES2240971-133	0908_QC110_221108	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	86.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	87.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.4	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2240971	Page	: 1 of 19
Amendment	: 3		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 11-Nov-2022
Site	: 0908_Williamtown	Issue Date	: 09-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 158
Order number	: 60612562_2.1	No. of samples analysed	: 157

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2240927--026	Anonymous	<b>Perfluorooctane sulfonic acid (PFOS)</b>	1763-23-1	Not Determined	----	<b>MS recovery not determined, background level greater than or equal to 4x spike level.</b>

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
<b>HDPE Soil Jar (EA055)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	----	----	----	16-Nov-2022	21-Nov-2022	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	----	----	----	16-Nov-2022	22-Nov-2022	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	----	----	----	16-Nov-2022	23-Nov-2022	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	----	----	----	16-Nov-2022	24-Nov-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	15-Nov-2022	06-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	15-Nov-2022	07-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	25-Dec-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	15-Nov-2022	06-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	15-Nov-2022	07-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	25-Dec-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	15-Nov-2022	06-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	15-Nov-2022	07-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	25-Dec-2022	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	15-Nov-2022	06-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	15-Nov-2022	07-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	25-Dec-2022	✓





Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD014_221107, 0908_SD079_221107, 0908_SS102_221107, 0908_SS106_221107, 0908_QC102_221107,	0908_SD062_221107, 0908_SS101_221107, 0908_SS103_221107, 0908_SS110_221107, 0908_QC104_221107	07-Nov-2022	15-Nov-2022	06-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_221108, 0908_SD006_221108, 0908_SD009_221108, 0908_SD024_221108, 0908_SS112_221108,	0908_SD005_221108, 0908_SD007_221108, 0908_SD023_221108, 0908_SD081_221108, 0908_QC107_221108	08-Nov-2022	15-Nov-2022	07-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD059_221109, 0908_SS108_221109, 0908_QC111_221109	0908_SD060_221109, 0908_SS109_221109,	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	25-Dec-2022	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_221110, 0908_SD055_221110, 0908_SD110_221110, 0908_SS105_221110,	0908_SD048_221110, 0908_SD108_221110, 0908_SS104_221110, 0908_SS107_221110	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	25-Dec-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>									
0908_MW124_221109, 0908_MW125S_221109, 0908_MW146AD_221109, 0908_MW166_221109, 0908_MW168_221109, 0908_MW169S_221109, 0908_MW278D_221109, 0908_SW059_221109, 0908_QC307_221109, 0908_QC310_221109,	0908_MW125D_221109, 0908_MW126S_221109, 0908_MW146S_221109, 0908_MW167_221109, 0908_MW169D_221109, 0908_MW178_221109, 0908_MW278S_221109, 0908_SW060_221109, 0908_QC308_221109, 0908_MW126D_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW196_221109, 0908_MW244D_221109,	0908_MW198_221109, 0908_MW244S_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC109_221109, 0908_QC113_221109	0908_QC112_221109,	09-Nov-2022	16-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_221110, 0908_MW109D_221110, 0908_MW172_221110, 0908_MW179D_221110, 0908_MW281S_221110, 0908_MW466_221110, 0908_SW047_221110, 0908_SW055_221110, 0908_QC309_221110, 0908_QC312_221110, 0908_QC105_221110, 0908_QC101_221110	0908_MW108S_221110, 0908_MW122_221110, 0908_MW175D_221110, 0908_MW179S_221110, 0908_MW282S_221110, 0908_MW468_221110, 0908_SW048_221110, 0908_SW108_221110, 0908_QC311_221110, 0908_QC314_221110, 0908_QC103_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW202D_221110, 0908_MW240D_221110, 0908_MW241S_221110	0908_MW202S_221110, 0908_MW241D_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_221110, 0908_QC115_221110	0908_QC114_221110,	10-Nov-2022	16-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_221111, 0908_MW280S_221111, 0908_MW315S_221111,	0908_MW107S_221111, 0908_MW315D_221111, 0908_QC313_221111	11-Nov-2022	15-Nov-2022	10-May-2023	✓	16-Nov-2022	10-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW212_221111		11-Nov-2022	15-Nov-2022	10-May-2023	✓	17-Nov-2022	10-May-2023	✓	





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231B: Perfluoroalkyl Carboxylic Acids - Continued</b>									
0908_MW124_221109, 0908_MW125S_221109, 0908_MW146AD_221109, 0908_MW166_221109, 0908_MW168_221109, 0908_MW169S_221109, 0908_MW278D_221109, 0908_SW059_221109, 0908_QC307_221109, 0908_QC310_221109,	0908_MW125D_221109, 0908_MW126S_221109, 0908_MW146S_221109, 0908_MW167_221109, 0908_MW169D_221109, 0908_MW178_221109, 0908_MW278S_221109, 0908_SW060_221109, 0908_QC308_221109, 0908_MW126D_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW196_221109, 0908_MW244D_221109,	0908_MW198_221109, 0908_MW244S_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC109_221109, 0908_QC113_221109	0908_QC112_221109,	09-Nov-2022	16-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_221110, 0908_MW109D_221110, 0908_MW172_221110, 0908_MW179D_221110, 0908_MW281S_221110, 0908_MW466_221110, 0908_SW047_221110, 0908_SW055_221110, 0908_QC309_221110, 0908_QC312_221110, 0908_QC105_221110, 0908_QC101_221110	0908_MW108S_221110, 0908_MW122_221110, 0908_MW175D_221110, 0908_MW179S_221110, 0908_MW282S_221110, 0908_MW468_221110, 0908_SW048_221110, 0908_SW108_221110, 0908_QC311_221110, 0908_QC314_221110, 0908_QC103_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW202D_221110, 0908_MW240D_221110, 0908_MW241S_221110	0908_MW202S_221110, 0908_MW241D_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_221110, 0908_QC115_221110	0908_QC114_221110,	10-Nov-2022	16-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_221111, 0908_MW280S_221111, 0908_MW315S_221111,	0908_MW107S_221111, 0908_MW315D_221111, 0908_QC313_221111	11-Nov-2022	15-Nov-2022	10-May-2023	✓	16-Nov-2022	10-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW212_221111		11-Nov-2022	15-Nov-2022	10-May-2023	✓	17-Nov-2022	10-May-2023	✓	





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
0908_MW124_221109, 0908_MW125S_221109, 0908_MW146AD_221109, 0908_MW166_221109, 0908_MW168_221109, 0908_MW169S_221109, 0908_MW278D_221109, 0908_SW059_221109, 0908_QC307_221109, 0908_QC310_221109,	0908_MW125D_221109, 0908_MW126S_221109, 0908_MW146S_221109, 0908_MW167_221109, 0908_MW169D_221109, 0908_MW178_221109, 0908_MW278S_221109, 0908_SW060_221109, 0908_QC308_221109, 0908_MW126D_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW196_221109, 0908_MW244D_221109,	0908_MW198_221109, 0908_MW244S_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC109_221109, 0908_QC113_221109	0908_QC112_221109,	09-Nov-2022	16-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_221110, 0908_MW109D_221110, 0908_MW172_221110, 0908_MW179D_221110, 0908_MW281S_221110, 0908_MW466_221110, 0908_SW047_221110, 0908_SW055_221110, 0908_QC309_221110, 0908_QC312_221110, 0908_QC105_221110, 0908_QC101_221110	0908_MW108S_221110, 0908_MW122_221110, 0908_MW175D_221110, 0908_MW179S_221110, 0908_MW282S_221110, 0908_MW468_221110, 0908_SW048_221110, 0908_SW108_221110, 0908_QC311_221110, 0908_QC314_221110, 0908_QC103_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW202D_221110, 0908_MW240D_221110, 0908_MW241S_221110	0908_MW202S_221110, 0908_MW241D_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_221110, 0908_QC115_221110	0908_QC114_221110,	10-Nov-2022	16-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_221111, 0908_MW280S_221111, 0908_MW315S_221111,	0908_MW107S_221111, 0908_MW315D_221111, 0908_QC313_221111	11-Nov-2022	15-Nov-2022	10-May-2023	✓	16-Nov-2022	10-May-2023	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW212_221111		11-Nov-2022	15-Nov-2022	10-May-2023	✓	17-Nov-2022	10-May-2023	✓	







Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued</b>								
0908_MW124_221109, 0908_MW125S_221109, 0908_MW146AD_221109, 0908_MW166_221109, 0908_MW168_221109, 0908_MW169S_221109, 0908_MW278D_221109, 0908_SW059_221109, 0908_QC307_221109, 0908_QC310_221109,	0908_MW125D_221109, 0908_MW126S_221109, 0908_MW146S_221109, 0908_MW167_221109, 0908_MW169D_221109, 0908_MW178_221109, 0908_MW278S_221109, 0908_SW060_221109, 0908_QC308_221109, 0908_MW126D_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW196_221109, 0908_MW244D_221109,	0908_MW198_221109, 0908_MW244S_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC109_221109, 0908_QC113_221109	0908_QC112_221109,	09-Nov-2022	16-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_221110, 0908_MW109D_221110, 0908_MW172_221110, 0908_MW179D_221110, 0908_MW281S_221110, 0908_MW466_221110, 0908_SW047_221110, 0908_SW055_221110, 0908_QC309_221110, 0908_QC312_221110, 0908_QC105_221110, 0908_QC101_221110	0908_MW108S_221110, 0908_MW122_221110, 0908_MW175D_221110, 0908_MW179S_221110, 0908_MW282S_221110, 0908_MW468_221110, 0908_SW048_221110, 0908_SW108_221110, 0908_QC311_221110, 0908_QC314_221110, 0908_QC103_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW202D_221110, 0908_MW240D_221110, 0908_MW241S_221110	0908_MW202S_221110, 0908_MW241D_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_221110, 0908_QC115_221110	0908_QC114_221110,	10-Nov-2022	16-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_221111, 0908_MW280S_221111, 0908_MW315S_221111,	0908_MW107S_221111, 0908_MW315D_221111, 0908_QC313_221111	11-Nov-2022	15-Nov-2022	10-May-2023	✓	16-Nov-2022	10-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW212_221111		11-Nov-2022	15-Nov-2022	10-May-2023	✓	17-Nov-2022	10-May-2023	✓





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums - Continued</b>								
0908_MW124_221109, 0908_MW125S_221109, 0908_MW146AD_221109, 0908_MW166_221109, 0908_MW168_221109, 0908_MW169S_221109, 0908_MW278D_221109, 0908_SW059_221109, 0908_QC307_221109, 0908_QC310_221109,	0908_MW125D_221109, 0908_MW126S_221109, 0908_MW146S_221109, 0908_MW167_221109, 0908_MW169D_221109, 0908_MW178_221109, 0908_MW278S_221109, 0908_SW060_221109, 0908_QC308_221109, 0908_MW126D_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	16-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW196_221109, 0908_MW244D_221109,	0908_MW198_221109, 0908_MW244S_221109	09-Nov-2022	15-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC109_221109, 0908_QC113_221109	0908_QC112_221109,	09-Nov-2022	16-Nov-2022	08-May-2023	✓	17-Nov-2022	08-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW108D_221110, 0908_MW109D_221110, 0908_MW172_221110, 0908_MW179D_221110, 0908_MW281S_221110, 0908_MW466_221110, 0908_SW047_221110, 0908_SW055_221110, 0908_QC309_221110, 0908_QC312_221110, 0908_QC105_221110, 0908_QC101_221110	0908_MW108S_221110, 0908_MW122_221110, 0908_MW175D_221110, 0908_MW179S_221110, 0908_MW282S_221110, 0908_MW468_221110, 0908_SW048_221110, 0908_SW108_221110, 0908_QC311_221110, 0908_QC314_221110, 0908_QC103_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	16-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW202D_221110, 0908_MW240D_221110, 0908_MW241S_221110	0908_MW202S_221110, 0908_MW241D_221110,	10-Nov-2022	15-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW110_221110, 0908_QC115_221110	0908_QC114_221110,	10-Nov-2022	16-Nov-2022	09-May-2023	✓	17-Nov-2022	09-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_221111, 0908_MW280S_221111, 0908_MW315S_221111,	0908_MW107S_221111, 0908_MW315D_221111, 0908_QC313_221111	11-Nov-2022	15-Nov-2022	10-May-2023	✓	16-Nov-2022	10-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW212_221111		11-Nov-2022	15-Nov-2022	10-May-2023	✓	17-Nov-2022	10-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	14	134	10.45	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	7	134	5.22	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	7	134	5.22	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	7	134	5.22	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2240971  
Amendment : 2

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 44620  
Site : 0908\_Williamtown  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 6  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 11-Nov-2022 15:30  
Client Requested Due : 18-Nov-2022  
Date

Issue Date : 06-Dec-2022  
Scheduled Reporting Date : 18-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 6  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9c - Ice present  
No. of samples received / analysed : 158 / 157

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QC101 (07.10.22) and 0908\_QC211\_221109 were received extra and placed on hold.**
- **(06/12/2022) This is an updated SRN which reflects a change in sampling date and time for sample 068.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2240971-079	08-Nov-2022 15:39	0908_SD001_221108	✓	✓
ES2240971-080	08-Nov-2022 09:09	0908_SD005_221108	✓	✓
ES2240971-081	08-Nov-2022 14:57	0908_SD006_221108	✓	✓
ES2240971-082	08-Nov-2022 14:43	0908_SD007_221108	✓	✓
ES2240971-083	08-Nov-2022 15:15	0908_SD009_221108	✓	✓
ES2240971-084	07-Nov-2022 14:55	0908_SD014_221107	✓	✓
ES2240971-085	08-Nov-2022 10:59	0908_SD023_221108	✓	✓
ES2240971-086	08-Nov-2022 10:12	0908_SD024_221108	✓	✓
ES2240971-087	10-Nov-2022 11:56	0908_SD047_221110	✓	✓
ES2240971-088	10-Nov-2022 11:41	0908_SD048_221110	✓	✓
ES2240971-089	10-Nov-2022 10:42	0908_SD055_221110	✓	✓
ES2240971-090	09-Nov-2022 09:29	0908_SD059_221109	✓	✓
ES2240971-091	09-Nov-2022 12:35	0908_SD060_221109	✓	✓
ES2240971-092	07-Nov-2022 14:29	0908_SD062_221107	✓	✓
ES2240971-093	07-Nov-2022 12:50	0908_SD079_221107	✓	✓
ES2240971-094	08-Nov-2022 09:31	0908_SD081_221108	✓	✓
ES2240971-095	10-Nov-2022 11:34	0908_SD108_221110	✓	✓
ES2240971-096	10-Nov-2022 11:20	0908_SD110_221110	✓	✓
ES2240971-097	07-Nov-2022 14:42	0908_SS101_221107	✓	✓
ES2240971-098	07-Nov-2022 12:18	0908_SS102_221107	✓	✓
ES2240971-099	07-Nov-2022 12:04	0908_SS103_221107	✓	✓
ES2240971-100	10-Nov-2022 14:44	0908_SS104_221110	✓	✓
ES2240971-101	10-Nov-2022 14:34	0908_SS105_221110	✓	✓
ES2240971-102	07-Nov-2022 14:10	0908_SS106_221107	✓	✓
ES2240971-103	10-Nov-2022 14:15	0908_SS107_221110	✓	✓
ES2240971-104	09-Nov-2022 09:48	0908_SS108_221109	✓	✓
ES2240971-105	09-Nov-2022 10:52	0908_SS109_221109	✓	✓
ES2240971-106	07-Nov-2022 14:35	0908_SS110_221107	✓	✓
ES2240971-107	08-Nov-2022 09:34	0908_SS112_221108	✓	✓
ES2240971-127	07-Nov-2022 14:42	0908_QC102_221107	✓	✓
ES2240971-128	07-Nov-2022 14:55	0908_QC104_221107	✓	✓
ES2240971-130	08-Nov-2022 15:15	0908_QC107_221108	✓	✓
ES2240971-134	09-Nov-2022 12:37	0908_QC111_221109	✓	✓



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2240971-001	08-Nov-2022 15:55	0908_MW106D_221108	✓
ES2240971-002	08-Nov-2022 15:48	0908_MW106S_221108	✓
ES2240971-003	11-Nov-2022 11:15	0908_MW107D_221111	✓
ES2240971-004	11-Nov-2022 11:11	0908_MW107S_221111	✓
ES2240971-005	10-Nov-2022 10:23	0908_MW108D_221110	✓
ES2240971-006	10-Nov-2022 10:16	0908_MW108S_221110	✓
ES2240971-007	10-Nov-2022 09:30	0908_MW109D_221110	✓
ES2240971-008	07-Nov-2022 12:39	0908_MW118_221107	✓
ES2240971-009	08-Nov-2022 11:59	0908_MW121_221108	✓
ES2240971-010	10-Nov-2022 15:11	0908_MW122_221110	✓
ES2240971-011	09-Nov-2022 08:34	0908_MW124_221109	✓
ES2240971-012	09-Nov-2022 09:17	0908_MW125D_221109	✓
ES2240971-013	09-Nov-2022 09:05	0908_MW125S_221109	✓
ES2240971-014	08-Nov-2022 11:25	0908_MW123_221108	✓
ES2240971-015	09-Nov-2022 12:29	0908_MW126S_221109	✓
ES2240971-016	07-Nov-2022 12:30	0908_MW128D_221107	✓
ES2240971-017	07-Nov-2022 12:18	0908_MW128S_221107	✓
ES2240971-018	08-Nov-2022 13:34	0908_MW130D_221108	✓
ES2240971-019	08-Nov-2022 13:25	0908_MW130S_221108	✓
ES2240971-020	08-Nov-2022 13:07	0908_MW132D_221108	✓
ES2240971-021	08-Nov-2022 13:11	0908_MW132S_221108	✓
ES2240971-022	09-Nov-2022 10:36	0908_MW146AD_221109	✓
ES2240971-023	09-Nov-2022 10:26	0908_MW146S_221109	✓
ES2240971-024	08-Nov-2022 11:06	0908_MW156D_221108	✓
ES2240971-025	08-Nov-2022 14:04	0908_MW160_221108	✓
ES2240971-026	07-Nov-2022 11:14	0908_MW162D_221107	✓
ES2240971-027	07-Nov-2022 11:26	0908_MW162S_221107	✓
ES2240971-028	07-Nov-2022 11:46	0908_MW163_221107	✓
ES2240971-029	09-Nov-2022 15:05	0908_MW166_221109	✓
ES2240971-030	09-Nov-2022 14:25	0908_MW167_221109	✓
ES2240971-031	09-Nov-2022 14:28	0908_MW168_221109	✓
ES2240971-032	09-Nov-2022 14:07	0908_MW169D_221109	✓
ES2240971-033	09-Nov-2022 13:57	0908_MW169S_221109	✓
ES2240971-034	10-Nov-2022 11:04	0908_MW172_221110	✓
ES2240971-035	10-Nov-2022 10:05	0908_MW175D_221110	✓
ES2240971-036	09-Nov-2022 12:02	0908_MW178_221109	✓
ES2240971-037	10-Nov-2022 12:13	0908_MW179D_221110	✓
ES2240971-038	10-Nov-2022 12:03	0908_MW179S_221110	✓
ES2240971-039	09-Nov-2022 08:59	0908_MW196_221109	✓
ES2240971-040	09-Nov-2022 08:34	0908_MW198_221109	✓
ES2240971-041	10-Nov-2022 12:32	0908_MW202D_221110	✓





WATER - EP231X  
PFAS - Full Suite (28 analytes)

ES2240971-042	10-Nov-2022 12:22	0908_MW202S_221110	✓
ES2240971-043	08-Nov-2022 15:29	0908_MW208_221108	✓
ES2240971-044	11-Nov-2022 08:52	0908_MW212_221111	✓
ES2240971-045	08-Nov-2022 08:59	0908_MW232D_221108	✓
ES2240971-046	08-Nov-2022 09:03	0908_MW232S_221108	✓
ES2240971-047	10-Nov-2022 09:50	0908_MW240D_221110	✓
ES2240971-048	10-Nov-2022 15:04	0908_MW241D_221110	✓
ES2240971-049	10-Nov-2022 14:55	0908_MW241S_221110	✓
ES2240971-050	09-Nov-2022 09:34	0908_MW244D_221109	✓
ES2240971-051	09-Nov-2022 09:22	0908_MW244S_221109	✓
ES2240971-052	08-Nov-2022 14:52	0908_MW247D_221108	✓
ES2240971-053	08-Nov-2022 14:55	0908_MW247S_221108	✓
ES2240971-054	07-Nov-2022 13:33	0908_MW256D_221107	✓
ES2240971-055	07-Nov-2022 13:53	0908_MW256S_221107	✓
ES2240971-056	07-Nov-2022 14:14	0908_MW257D_221107	✓
ES2240971-057	07-Nov-2022 14:25	0908_MW257S_221107	✓
ES2240971-058	07-Nov-2022 15:31	0908_MW258D_221107	✓
ES2240971-059	07-Nov-2022 15:11	0908_MW258S_221107	✓
ES2240971-060	08-Nov-2022 09:46	0908_MW260D_221108	✓
ES2240971-061	08-Nov-2022 09:33	0908_MW260S_221108	✓
ES2240971-062	08-Nov-2022 08:37	0908_MW263D_221108	✓
ES2240971-063	08-Nov-2022 08:27	0908_MW263S_221108	✓
ES2240971-064	09-Nov-2022 11:43	0908_MW278D_221109	✓
ES2240971-065	09-Nov-2022 11:51	0908_MW278S_221109	✓
ES2240971-066	07-Nov-2022 13:32	0908_MW279S_221107	✓
ES2240971-067	11-Nov-2022 10:45	0908_MW280S_221111	✓
ES2240971-068	10-Nov-2022 10:21	0908_MW281S_221110	✓
ES2240971-069	10-Nov-2022 10:08	0908_MW282S_221110	✓
ES2240971-070	11-Nov-2022 09:40	0908_MW315D_221111	✓
ES2240971-071	11-Nov-2022 09:50	0908_MW315S_221111	✓
ES2240971-072	07-Nov-2022 11:35	0908_MW316D_221107	✓
ES2240971-073	08-Nov-2022 13:33	0908_MW318D_221108	✓
ES2240971-074	08-Nov-2022 13:48	0908_MW318S_221108	✓
ES2240971-075	08-Nov-2022 11:09	0908_MW433_221108	✓
ES2240971-076	10-Nov-2022 09:55	0908_MW466_221110	✓
ES2240971-077	10-Nov-2022 09:43	0908_MW468_221110	✓
ES2240971-078	08-Nov-2022 14:03	0908_MW829_221108	✓
ES2240971-108	08-Nov-2022 15:35	0908_SW001_221108	✓
ES2240971-109	08-Nov-2022 09:06	0908_SW005_221108	✓
ES2240971-110	08-Nov-2022 14:56	0908_SW006_221108	✓
ES2240971-111	08-Nov-2022 14:44	0908_SW007_221108	✓



WATER - EP231X  
PFAS - Full Suite (28 analytes)

ES2240971-112	08-Nov-2022 15:12	0908_SW009_221108	✓
ES2240971-113	07-Nov-2022 14:56	0908_SW014_221107	✓
ES2240971-114	08-Nov-2022 10:58	0908_SW023_221108	✓
ES2240971-115	08-Nov-2022 10:13	0908_SW024_221108	✓
ES2240971-116	10-Nov-2022 11:57	0908_SW047_221110	✓
ES2240971-117	10-Nov-2022 11:33	0908_SW048_221110	✓
ES2240971-118	10-Nov-2022 10:36	0908_SW055_221110	✓
ES2240971-119	09-Nov-2022 09:30	0908_SW059_221109	✓
ES2240971-120	09-Nov-2022 12:35	0908_SW060_221109	✓
ES2240971-121	07-Nov-2022 14:28	0908_SW062_221107	✓
ES2240971-122	07-Nov-2022 12:49	0908_SW079_221107	✓
ES2240971-123	08-Nov-2022 09:27	0908_SW081_221108	✓
ES2240971-124	10-Nov-2022 11:32	0908_SW108_221110	✓
ES2240971-125	10-Nov-2022 11:12	0908_SW110_221110	✓
ES2240971-126	07-Nov-2022 13:54	0908_QC100_221107	✓
ES2240971-129	07-Nov-2022 15:32	0908_QC106_221107	✓
ES2240971-131	08-Nov-2022 09:11	0908_QC108_221108	✓
ES2240971-132	09-Nov-2022 12:35	0908_QC109_221109	✓
ES2240971-133	08-Nov-2022 11:58	0908_QC110_221108	✓
ES2240971-135	09-Nov-2022 11:42	0908_QC112_221109	✓
ES2240971-136	09-Nov-2022 14:06	0908_QC113_221109	✓
ES2240971-137	10-Nov-2022 11:36	0908_QC114_221110	✓
ES2240971-138	10-Nov-2022 14:52	0908_QC115_221110	✓
ES2240971-139	07-Nov-2022 15:43	0908_QC300_221107	✓
ES2240971-140	07-Nov-2022 14:49	0908_QC301_221107	✓
ES2240971-141	07-Nov-2022 15:45	0908_QC302_221107	✓
ES2240971-142	07-Nov-2022 14:48	0908_QC303_221107	✓
ES2240971-143	08-Nov-2022 17:00	0908_QC304_221108	✓
ES2240971-144	08-Nov-2022 14:55	0908_QC305_221108	✓
ES2240971-145	08-Nov-2022 17:37	0908_QC306_221108	✓
ES2240971-146	09-Nov-2022 15:04	0908_QC307_221109	✓
ES2240971-147	09-Nov-2022 15:05	0908_QC308_221109	✓
ES2240971-148	10-Nov-2022 17:00	0908_QC309_221110	✓
ES2240971-149	09-Nov-2022 15:05	0908_QC310_221109	✓
ES2240971-150	10-Nov-2022 17:00	0908_QC311_221110	✓
ES2240971-151	10-Nov-2022 15:54	0908_QC312_221110	✓
ES2240971-152	11-Nov-2022 14:04	0908_QC313_221111	✓
ES2240971-153	10-Nov-2022 15:54	0908_QC314_221110	✓
ES2240971-155	09-Nov-2022 12:16	0908_MW126D_221109	✓
ES2240971-156	10-Nov-2022 11:04	0908_QC105_221110	✓
ES2240971-157	10-Nov-2022 10:21	0908_QC103_221110	✓



			WATER - EP231X PFAS - Full Suite (28 analytes)
ES2240971-158	10-Nov-2022 09:50	0908_QC101_221110	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

#### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
 Email  
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 Email  
 Email  
 Email  
 Email  
 Email



#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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Phoung Tran

From: [Redacted]  
Sent: Wednesday, 16 November 2022 1:10 PM  
To: Samples Sydney; [Redacted]  
Subject: RE: Update ES2240971, Client AECOMAU, Project NSW\_0908\_PFAASOMP

Hey all,  
This sample will go to Enviro-lab today.

Regards

[Redacted]

[Redacted]

Can you please amend WO ES220971 as per below email?

Hi Ramsen,

Can you please grab sample 0908\_QC211\_221109 (AL.#160) and Pwd. to Envirolab with a copy of this COC?

Regards

[Redacted]

Environmental Division  
Sydney  
Work Order Reference  
ES2240971



Telephone : + 61-2-8794 5505

0908\_QC211\_221109 / EnviroLab

Subron / Forward Lab / Split WO \_\_\_\_\_  
Lab / Analyst \_\_\_\_\_  
Organised by / Date \_\_\_\_\_  
Relinquished by / Date \_\_\_\_\_  
Comore / Counter \_\_\_\_\_  
WO No: \_\_\_\_\_  
Attached By PO / Internal Sheet \_\_\_\_\_

**From:** ALSEnviro Sydney <ALSEnviro.Sydney@ALSGlobal.com>

**Sent:** Wednesday, 16 November 2022 12:33 PM

**To:** Samples Sydney <Samples.Sydney@alsglobal.com>

**Subject:** Update ES2240971, Client AECOMAU, Project NSW\_0908\_PFAASOMP

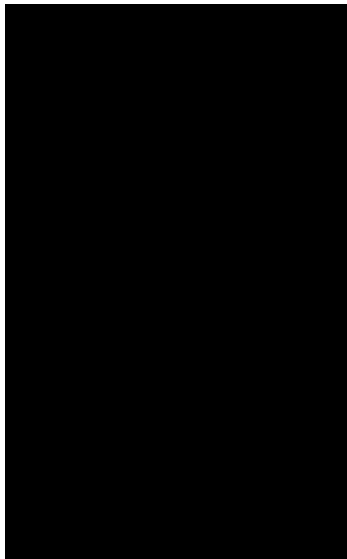
Hi Team,

Could you please action the requests below?

Kind regards,

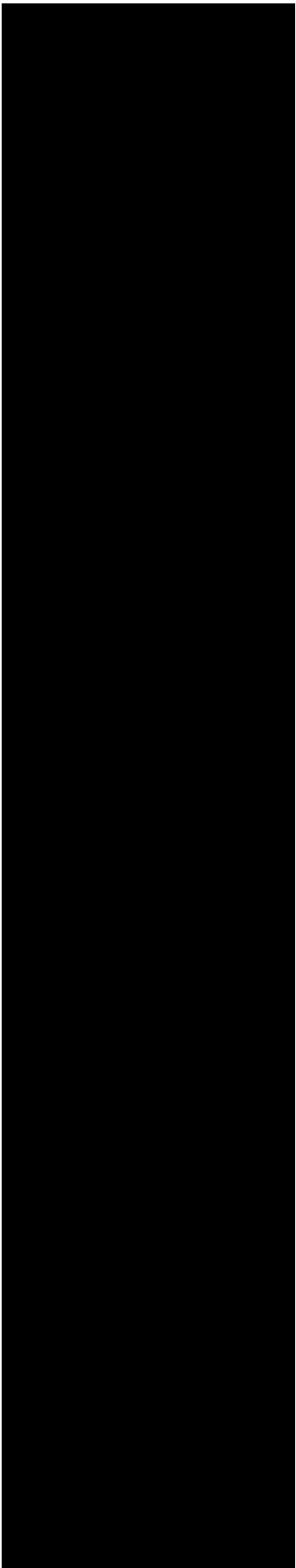
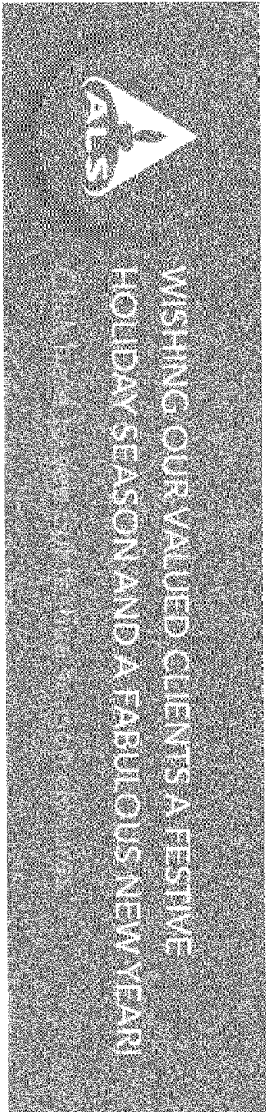


Right solutions  
for partners



[alsglobal.com](http://alsglobal.com)





I'm back from fieldwork now and have looked into this.

0908\_QC101\_221107: can be discarded, we re-took QC101 on the 10<sup>th</sup> (sample # 158) as the first time it was not done properly.

0908\_QC211\_221109: please forward to Envrilab @Simon Song to be allocated to their work order 310531, we accidentally put it in the wrong esky.

Let me know if you have any questions.

Thank you.



AECOM

[aeconm.com](http://aeconm.com)

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*I acknowledge the Traditional Custodians of the Country on which we work and learn every day, and pay my respects to Elders past, present, and future.*

Thanks please keep on hold for now. I'll check my records once I'm done on site today.

Cheers,

Hope you had a good weekend,

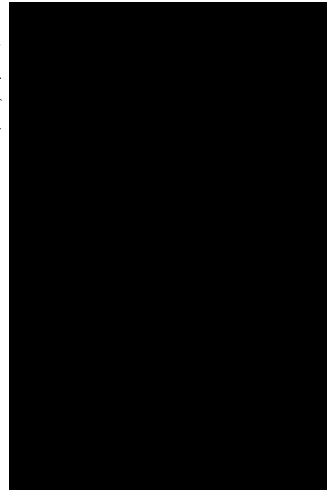
Please note that we have received two extra samples in workorder ES2240971: sample 159 - 0908...QC101...221107 and sample 160 - 0908...QC211...221109.

These samples are kept on hold so please let me know if you'd like us to analyse them for you.

Kind regards,



alsjohal.com



STADT KÖLN  
KUNSTHAUS







**Custody Document for Submissions via ALS Compass App**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2240971**



Project: 60612 562 Client: AECOM Project Manager  
 Phone: [Redacted]

ALS Compass COC Reference: 44620 # Samples: \_\_\_\_\_  
 Sampler: \_\_\_\_\_  
 Phone: \_\_\_\_\_

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:	ALS Use Only	YES	NO	N/A
	Custody seal intact?		2.9	
	Free ice frozen ice bricks upon receipt?	<input checked="" type="checkbox"/>		
	Random sample temperature on receipt?			°C

Custody:	Relinquished by:	Received by:	Relinquished by:	Received by:
	[Redacted]	[Signature]	[Signature]	[Signature]
Date / Time:		Date / Time:	Date / Time:	Date / Time:
11-11-2022		11.11.22 3:10	11.11.22 5pm	11/11/22 19:3

**CHAIN OF CUSTODY**

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMV106D_221108		08/11/2022 03:55 PM	Water	ALS: 4 Non ALS: 0	No		X		
002	0908_MMV106S_221108		08/11/2022 03:48 PM	Water	ALS: 4 Non ALS: 0	No		X		
003	0908_MMV107D_221111		11/11/2022 11:15 AM	Water	ALS: 4 Non ALS: 0	No		X		
004	0908_MMV107S_221111		11/11/2022 11:11 AM	Water	ALS: 4 Non ALS: 0	No		X		
005	0908_MMV109D_221110		10/11/2022 10:23 AM	Water	ALS: 4 Non ALS: 0	No		X		
006	0908_MMV108S_221110		10/11/2022 10:16 AM	Water	ALS: 4 Non ALS: 0	No		X		
007	0908_MMV109D_221110		10/11/2022 09:30 AM	Water	ALS: 4 Non ALS: 0	No		X		
008	0908_MMV118_221110		07/11/2022 12:39 PM	Water	ALS: 4 Non ALS: 0	No		X		
009	0908_MMV121_221108		08/11/2022 11:59 AM	Water	ALS: 4 Non ALS: 0	No		X		



# CHAIN OF CUSTODY

ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

### SAMPLE DETAILS

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
010	0908_MW122_22110		10/11/2022 03:11 PM	Water	ALS: 4 Non ALS: 0	No				
011	0908_MW124_221109		09/11/2022 08:34 AM	Water	ALS: 4 Non ALS: 0	No		X		
012	0908_MW125D_221109		09/11/2022 09:17 AM	Water	ALS: 4 Non ALS: 0	No		X		
013	0908_MW125S_221109		09/11/2022 09:05 AM	Water	ALS: 4 Non ALS: 0	No		X		
014	0908_MW123_221108		09/11/2022 11:25 AM	Water	ALS: 4 Non ALS: 0	No		X		
015	0908_MW126S_221109		09/11/2022 12:29 PM	Water	ALS: 4 Non ALS: 0	No		X		
016	0908_MW128D_221107		07/11/2022 12:30 PM	Water	ALS: 4 Non ALS: 0	No		X		
017	0908_MW128S_221107		07/11/2022 12:18 PM	Water	ALS: 4 Non ALS: 0	No		X		
018	0908_MW130D_221108		08/11/2022 01:48 PM	Water	ALS: 4 Non ALS: 0	No		X		

### ANALYSIS REQUIRED

PFA5 Soil - New Analysis SOIL  
PFA5 Waters - New Analysis WATER  
ALTERNATIVE ANALYSIS



# CHAIN OF CUSTODY

ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

Other comments: Random Sample Temperature on Receipt: °C

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Bionazard Info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
019	0908_MW130S_221108		08/11/2022 01:25 PM	Water	ALS: 4 Non ALS: 0	No		X		
020	0908_MW132D_221108		08/11/2022 01:07 PM	Water	ALS: 3 Non ALS: 0	No		X		
021	0908_MW132S_221108		08/11/2022 01:11 PM	Water	ALS: 4 Non ALS: 0	No		X		
022	0908_MW146AD_221109		09/11/2022 10:36 AM	Water	ALS: 4 Non ALS: 0	No		X		
023	0908_MW146S_221109		09/11/2022 10:26 AM	Water	ALS: 3 Non ALS: 0	No		X		
024	0908_MW156D_221108		08/11/2022 11:06 AM	Water	ALS: 4 Non ALS: 0	No		X		
025	0908_MW160_221108		08/11/2022 02:04 PM	Water	ALS: 4 Non ALS: 0	No		X		
026	0908_MW162D_221107		07/11/2022 11:14 AM	Water	ALS: 3 Non ALS: 0	No		X		
027	0908_MW162S_221107		07/11/2022 11:26 AM	Water	ALS: 4 Non ALS: 0	No		X		



# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney

ALS) COC#: 44620

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
028	0908_MW163_221107		07/11/2022 11:46 AM	Water	ALS: 4 Non ALS: 0	No		X		
029	0908_MW166_221109		09/11/2022 03:05 PM	Water	ALS: 4 Non ALS: 0	No		X		
030	0908_MW167_221109		09/11/2022 02:25 PM	Water	ALS: 4 Non ALS: 0	No		X		
031	0908_MW168_221109		09/11/2022 02:28 PM	Water	ALS: 4 Non ALS: 0	No		X		
032	0908_MW169D_221109		09/11/2022 02:07 PM	Water	ALS: 4 Non ALS: 0	No		X		
033	0908_MW169S_221109		09/11/2022 01:57 PM	Water	ALS: 4 Non ALS: 0	No		X		
034	0908_MW172_221110		10/11/2022 11:04 AM	Water	ALS: 4 Non ALS: 0	No		X		
035	0908_MW175D_221110		10/11/2022 10:05 AM	Water	ALS: 4 Non ALS: 0	No		X		
036	0908_MW178_221109		09/11/2022 12:02 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamstown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_MMW179D_221110		11/11/2022 08:51 AM	Water	ALS: 3 Non ALS: 0	No		X		
038	0908_MMW179S_221110		09/11/2022 12:02 PM	Water	ALS: 4 Non ALS: 0	No		X		
039	0908_MMW196_221109		09/11/2022 08:59 AM	Water	ALS: 4 Non ALS: 0	No		X		
040	0908_MMW198_221109		09/11/2022 08:34 AM	Water	ALS: 4 Non ALS: 0	No		X		
041	0908_MMW202D_221110		10/11/2022 12:32 PM	Water	ALS: 4 Non ALS: 0	No		X		
042	0908_MMW202S_221110		10/11/2022 12:22 PM	Water	ALS: 4 Non ALS: 0	No		X		
043	0908_MMW208_221108		09/11/2022 03:29 PM	Water	ALS: 4 Non ALS: 0	No		X		
044	0908_MMW212_221111		11/11/2022 08:52 AM	Water	ALS: 4 Non ALS: 0	No		X		
045	0908_MMW232D_221108		09/11/2022 05:09 PM	Water	ALS: 4 Non ALS: 0	No		X		



# CHAIN OF CUSTODY

ALS COOC# 44620

ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]

QUOTE NO: SY13919 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
046	0908_MMV232S_221108		08/11/2022 04:47 PM	Water	ALS: 4 Non ALS: 0	No	PFAS Soil - New Analysis SOIL	
047	0908_MMV240D_221110		10/11/2022 09:50 AM	Water	ALS: 4 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
048	0908_MMV241D_221110		08/11/2022 03:04 PM	Water	ALS: 4 Non ALS: 0	No	X	
049	0908_MMV241S_221110		10/11/2022 02:55 PM	Water	ALS: 4 Non ALS: 0	No	X	
050	0908_MMV244D_221109		09/11/2022 09:34 AM	Water	ALS: 4 Non ALS: 0	No	X	
051	0908_MMV244S_221109		09/11/2022 09:22 AM	Water	ALS: 4 Non ALS: 0	No	X	
052	0908_MMV247D_221108		08/11/2022 02:41 PM	Water	ALS: 4 Non ALS: 0	No	X	
053	0908_MMV247S_221108		08/11/2022 02:55 PM	Water	ALS: 4 Non ALS: 0	No	X	
054	0908_MMV256D_221107		07/11/2022 01:33 PM	Water	ALS: 4 Non ALS: 0	No	X	



**CHAIN OF CUSTODY**

ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0908_MW256S_221107		07/11/2022 01:53 PM	Water	ALS: 4 Non ALS: 0	No	PFAS Soil - New Analysis SOIL	
056	0908_MW257D_221107		07/11/2022 02:14 PM	Water	ALS: 4 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
057	0908_MW257S_221107		07/11/2022 02:25 PM	Water	ALS: 4 Non ALS: 0	No		
058	0908_MW259D_221107		07/11/2022 03:31 PM	Water	ALS: 3 Non ALS: 0	No		
059	0908_MW258S_221107		07/11/2022 03:41 PM	Water	ALS: 4 Non ALS: 0	No		
060	0908_MW260D_221108		08/11/2022 09:46 AM	Water	ALS: 4 Non ALS: 0	No		
061	0908_MW260S_221108		08/11/2022 09:33 AM	Water	ALS: 4 Non ALS: 0	No		
062	0908_MW263D_221108		08/11/2022 08:37 AM	Water	ALS: 4 Non ALS: 0	No		
063	0908_MW263S_221108		08/11/2022 08:27 AM	Water	ALS: 4 Non ALS: 0	No		



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASCOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOM/AU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0908_MMW278D_221109		09/11/2022 11:43 AM	Water	ALS: 4 Non ALS: 0	No		X		
065	0908_MMW278S_221109		09/11/2022 11:51 AM	Water	ALS: 4 Non ALS: 0	No		X		
066	0908_MMW279S_221107		07/11/2022 01:32 PM	Water	ALS: 4 Non ALS: 0	No		X		
067	0908_MMW280S_221111		11/11/2022 10:45 AM	Water	ALS: 4 Non ALS: 0	No		X		
068	0908_MMW281S_221110		09/11/2022 10:20 AM	Water	ALS: 4 Non ALS: 0	No		X		
069	0908_MMW282S_221110		10/11/2022 10:08 AM	Water	ALS: 4 Non ALS: 0	No		X		
070	0908_MMW315D_221111		11/11/2022 09:40 AM	Water	ALS: 4 Non ALS: 0	No		X		
071	0908_MMW315S_221111		11/11/2022 09:50 AM	Water	ALS: 4 Non ALS: 0	No		X		
072	0908_MMW316D_221107		07/11/2022 11:35 AM	Water	ALS: 4 Non ALS: 0	No		X		



# CHAIN OF CUSTODY

ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASSOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOM/0908

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFASSoil - New Analysis SOIL	PFASWaters - New Analysis WATER	ALTERNATIVE ANALYSIS	
073	0908_MW318D_221108		08/11/2022 01:33 PM	Water	ALS: 4 Non ALS: 0	No		X		
074	0908_MW318S_221108		08/11/2022 01:48 PM	Water	ALS: 4 Non ALS: 0	No		X		
075	0908_MW433_221108		08/11/2022 11:09 AM	Water	ALS: 4 Non ALS: 0	No		X		
076	0908_MW466_221110		10/11/2022 09:55 AM	Water	ALS: 4 Non ALS: 0	No		X		
077	0908_MW468_221110		10/11/2022 09:43 AM	Water	ALS: 4 Non ALS: 0	No		X		
078	0908_MW829_221108		08/11/2022 02:05 PM	Water	ALS: 4 Non ALS: 0	No		X		
079	0908_SD001_221108		08/11/2022 03:39 PM	Soil	ALS: 1 Non ALS: 0	No		X		
080	0908_SD005_221105		08/11/2022 09:09 AM	Soil	ALS: 1 Non ALS: 0	No		X		
081	0908_SD006_221108		08/11/2022 02:57 PM	Soil	ALS: 1 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
082	0908_SDO07_221108		08/11/2022 02:43 PM	Soil	ALS: 1 Non ALS: 0	No	X			
083	0908_SDO09_221108		08/11/2022 03:15 PM	Soil	ALS: 1 Non ALS: 0	No	X			
084	0908_SDO14_221107		07/11/2022 02:55 PM	Soil	ALS: 1 Non ALS: 0	No	X			
085	0908_SDO23_221108		08/11/2022 10:59 AM	Soil	ALS: 1 Non ALS: 0	No	X			
086	0908_SDO24_221108		08/11/2022 10:12 AM	Soil	ALS: 1 Non ALS: 0	No	X			
087	0908_SDO47_221110		10/11/2022 11:56 AM	Soil	ALS: 1 Non ALS: 0	No	X			
088	0908_SDO48_221110		10/11/2022 11:33 AM	Soil	ALS: 1 Non ALS: 0	No	X			
089	0908_SDO85_221110		10/11/2022 10:42 AM	Soil	ALS: 1 Non ALS: 0	No	X			
090	0908_SDO89_221109		09/11/2022 09:29 AM	Soil	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_FFASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021A

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
091	0908_SD060_221109		09/11/2022 12:35 PM	Soil	ALS: 1 Non ALS: 0	No	X			
092	0908_SD062_221107		07/11/2022 02:29 PM	Soil	ALS: 1 Non ALS: 0	No	X			
093	0908_SDD079_221107		07/11/2022 12:50 PM	Soil	ALS: 1 Non ALS: 0	No	X			
094	0908_SDD081_221108		08/11/2022 09:31 AM	Soil	ALS: 1 Non ALS: 0	No	X			
095	0908_SD108_221110		10/11/2022 11:34 AM	Soil	ALS: 1 Non ALS: 0	No	X			
096	0908_SD110_221110		10/11/2022 11:20 AM	Soil	ALS: 1 Non ALS: 0	No	X			
097	0908_SS101_221107		07/11/2022 02:42 PM	Soil	ALS: 1 Non ALS: 0	No	X			
098	0908_SS102_221107		07/11/2022 12:16 PM	Soil	ALS: 1 Non ALS: 0	No	X			
099	0908_SS103_221107		07/11/2022 12:04 PM	Soil	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_Peasomp

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 SAMPLER MOBILE: [REDACTED]

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
100	0908_SS104_221110		10/11/2022 02:44 PM	Soil	ALS: 1 Non ALS: 0	No	X			
101	0908_SS105_221110		10/11/2022 02:34 PM	Soil	ALS: 1 Non ALS: 0	No	X			
102	0908_SS106_221107		07/11/2022 02:10 PM	Soil	ALS: 1 Non ALS: 0	No	X			
103	0908_SS107_221110		10/11/2022 02:15 PM	Soil	ALS: 1 Non ALS: 0	No	X			
104	0908_SS108_221109		09/11/2022 09:48 AM	Soil	ALS: 1 Non ALS: 0	No	X			
105	0908_SS109_221109		09/11/2022 10:52 AM	Soil	ALS: 1 Non ALS: 0	No	X			
106	0908_SS110_221107		07/11/2022 02:35 PM	Soil	ALS: 1 Non ALS: 0	No	X			
107	0908_SS112_221108		08/11/2022 08:34 AM	Soil	ALS: 1 Non ALS: 0	No	X			
108	0908_SW001_221108		08/11/2022 03:35 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
109	0908_SW005_221108		08/11/2022 09:06 AM	Water	ALS: 4 Non ALS: 0	No		X		
110	0908_SW006_221108		08/11/2022 02:56 PM	Water	ALS: 4 Non ALS: 0	No		X		
111	0908_SW007_221108		08/11/2022 02:44 PM	Water	ALS: 3 Non ALS: 0	No		X		
112	0908_SW009_221108		08/11/2022 03:12 PM	Water	ALS: 4 Non ALS: 0	No		X		
113	0908_SW014_221107		07/11/2022 02:56 PM	Water	ALS: 4 Non ALS: 0	No		X		
114	0908_SW023_221108		08/11/2022 10:58 AM	Water	ALS: 4 Non ALS: 0	No		X		
115	0908_SW024_221108		08/11/2022 10:13 AM	Water	ALS: 4 Non ALS: 0	No		X		
116	0908_SW047_221110		10/11/2022 11:57 AM	Water	ALS: 4 Non ALS: 0	No		X		
117	0908_SW048_221110		10/11/2022 03:08 PM	Water	ALS: 4 Non ALS: 0	No		X		

# CHAIN OF CUSTODY

ALS) COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU002 4

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
118	0908_SW005_221110		10/11/2022 10:36 AM	Water	ALS: 4 Non ALS: 0	No		X		
119	0908_SW009_221109		09/11/2022 09:30 AM	Water	ALS: 4 Non ALS: 0	No		X		
120	0908_SW000_221109		09/11/2022 12:35 PM	Water	ALS: 4 Non ALS: 0	No		X		
121	0908_SW002_221107		07/11/2022 02:28 PM	Water	ALS: 4 Non ALS: 0	No		X		
122	0908_SW079_221107		07/11/2022 12:49 PM	Water	ALS: 4 Non ALS: 0	No		X		
123	0908_SW0081_221108		08/11/2022 09:27 AM	Water	ALS: 4 Non ALS: 0	No		X		
124	0908_SW108_221110		10/11/2022 11:32 AM	Water	ALS: 4 Non ALS: 0	No		X		
125	0908_SW110_221110		10/11/2022 11:12 AM	Water	ALS: 4 Non ALS: 0	No		X		
126	0908_QC100_221107		07/11/2022 01:54 PM	Water	ALS: 4 Non ALS: 0	No		X		







# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

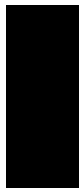
CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
PRIMARY SAMPLER:



CONTACT PH: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE: [REDACTED]

LABORATORY USE ONLY (Circle)  
Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
136	0908_QC113_221109		09/11/2022 02:06 PM	Water	ALS: 4 Non ALS: 0	No		X		
137	0908_QC114_221110		10/11/2022 11:36 AM	Water	ALS: 3 Non ALS: 0	No		X		
138	0908_QC115_221110		10/11/2022 02:52 PM	Water	ALS: 4 Non ALS: 0	No		X		
139	0908_QC300_221107		07/11/2022 03:43 PM	Water	ALS: 5 Non ALS: 0	No		X		
140	0908_QC301_221107		07/11/2022 02:49 PM	Water	ALS: 5 Non ALS: 0	No		X		
141	0908_QC302_221107		07/11/2022 03:45 PM	Water	ALS: 3 Non ALS: 0	No		X		
142	0908_QC303_221107		07/11/2022 02:48 PM	Water	ALS: 3 Non ALS: 0	No		X		
143	0908_QC304_221108		09/11/2022 09:36 AM	Water	ALS: 4 Non ALS: 0	No		X		
144	0908_QC305_221108		08/11/2022 02:55 PM	Water	ALS: 3 Non ALS: 0	No		X		

**CHAIN OF CUSTODY**  
 ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
145	0908_QC306_221108		08/11/2022 05:37 PM	Water	ALS: 4 Non ALS: 0	No		X		
146	0908_QC307_221109		09/11/2022 03:04 PM	Water	ALS: 4 Non ALS: 0	No		X		
147	0908_QC308_221109		09/11/2022 03:05 PM	Water	ALS: 4 Non ALS: 0	No		X		
148	0908_QC309_221110		11/11/2022 02:01 PM	Water	ALS: 4 Non ALS: 0	No		X		
149	0908_QC310_221109		09/11/2022 03:05 PM	Water	ALS: 4 Non ALS: 0	No		X		
150	0908_QC311_221110		11/11/2022 02:02 PM	Water	ALS: 4 Non ALS: 0	No		X		
151	0908_QC312_221110		10/11/2022 03:54 PM	Water	ALS: 4 Non ALS: 0	No		X		
152	0908_QC313_221111		11/11/2022 02:04 PM	Water	ALS: 4 Non ALS: 0	No		X		
153	0908_QC314_221110		10/11/2022 03:54 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASCOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info.

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

**LABORATORY USE ONLY (Circle)**  
Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	
154	0908_OTH075_221108		08/11/2022 10:30 AM	Water	ALS: 4 Non ALS: 0	No		X		Water and foam mix
155	0908_MMW126D_221109		09/11/2022 12:16 PM	Water	ALS: 4 Non ALS: 0	No		X		
156	0908_QC105_221110		11/11/2022 03:30 PM	Water	ALS: 4 Non ALS: 0	No		X		
157	0908_QC103_221110		11/11/2022 03:31 PM	Water	ALS: 4 Non ALS: 0	No		X		
158	0908_QC101_221110		11/11/2022 03:32 PM	Water	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:  
 LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW106D_221108	HDPE (no PTFE)	20 mL	00350822015882	Grey	No	
001	0908_MW106D_221108	HDPE (no PTFE)	20 mL	00350522015350	Grey	No	
001	0908_MW106D_221108	HDPE (no PTFE)	20 mL	00350522015255	Grey	No	
001	0908_MW106D_221108	HDPE (no PTFE)	20 mL	00350522015287	Grey	No	
002	0908_MW106S_221108	HDPE (no PTFE)	20 mL	00350821015178	Grey	No	
002	0908_MW106S_221108	HDPE (no PTFE)	20 mL	00350821015132	Grey	No	
002	0908_MW106S_221108	HDPE (no PTFE)	20 mL	00350821015154	Grey	No	
002	0908_MW106S_221108	HDPE (no PTFE)	20 mL	00350821015181	Grey	No	
002	0908_MW106S_221108	HDPE (no PTFE)	20 mL	00350821015061	Grey	No	
003	0908_MW107D_221111	HDPE (no PTFE)	20 mL	00350821014908	Grey	No	
003	0908_MW107D_221111	HDPE (no PTFE)	20 mL	00350821014983	Grey	No	
003	0908_MW107D_221111	HDPE (no PTFE)	20 mL	00350821014944	Grey	No	
003	0908_MW107D_221111	HDPE (no PTFE)	20 mL	00350821015162	Grey	No	
003	0908_MW107D_221111	HDPE (no PTFE)	20 mL	00350821015158	Grey	No	
004	0908_MW107S_221111	HDPE (no PTFE)	20 mL	00350821015107	Grey	No	
004	0908_MW107S_221111	HDPE (no PTFE)	20 mL	00350821015079	Grey	No	
004	0908_MW107S_221111	HDPE (no PTFE)	20 mL	00350821015135	Grey	No	
004	0908_MW107S_221111	HDPE (no PTFE)	20 mL	00350821015032	Grey	No	
005	0908_MW108D_221110	HDPE (no PTFE)	20 mL	00350821015110	Grey	No	
005	0908_MW108D_221110	HDPE (no PTFE)	20 mL	00350821014902	Grey	No	
006	0908_MW108S_221110	HDPE (no PTFE)	20 mL	00350821014932	Grey	No	
006	0908_MW108S_221110	HDPE (no PTFE)	20 mL	00350821015030	Grey	No	
006	0908_MW108S_221110	HDPE (no PTFE)	20 mL	00350821014903	Grey	No	
006	0908_MW108S_221110	HDPE (no PTFE)	20 mL	00350522040121	Grey	No	
007	0908_MW109D_221110	HDPE (no PTFE)	20 mL	00350522040016	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE: [REDACTED]

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact?  
 Free ice / frozen ice bricks present upon receipt?  
 Random Sample Temperature on Receipt:  
 Other comments:

Yes No N/A  
 Yes No N/A  
 C

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard info:		Custody Seal Intact?					
		Free ice / frozen ice bricks present upon receipt?					
		Random Sample Temperature on Receipt:					
		Other comments:					
007	0908_MMV109D_221110	HDPE (no PTFE)	20 mL	00350821015050	Grey	No	
007	0908_MMV109D_221110	HDPE (no PTFE)	20 mL	00350821015186	Grey	No	
008	0908_MMV118_221110	HDPE (no PTFE)	20 mL	00350821015520	Grey	No	
008	0908_MMV118_221110	HDPE (no PTFE)	20 mL	00350821015604	Grey	No	
008	0908_MMV118_221110	HDPE (no PTFE)	20 mL	00350821015572	Grey	No	
008	0908_MMV118_221110	HDPE (no PTFE)	20 mL	00350821015623	Grey	No	
009	0908_MMV121_221108	HDPE (no PTFE)	20 mL	00350522015394	Grey	No	
009	0908_MMV121_221108	HDPE (no PTFE)	20 mL	00350522015587	Grey	No	
009	0908_MMV121_221108	HDPE (no PTFE)	20 mL	00350522015552	Grey	No	
009	0908_MMV121_221108	HDPE (no PTFE)	20 mL	00350522015643	Grey	No	
009	0908_MMV121_221108	HDPE (no PTFE)	20 mL	00350522015021	Grey	No	
010	0908_MMV122_221110	HDPE (no PTFE)	20 mL	00350821015017	Grey	No	
010	0908_MMV122_221110	HDPE (no PTFE)	20 mL	00350821015116	Grey	No	
010	0908_MMV122_221110	HDPE (no PTFE)	20 mL	00350821015028	Grey	No	
010	0908_MMV122_221110	HDPE (no PTFE)	20 mL	00350821015070	Grey	No	
011	0908_MMV124_221109	HDPE (no PTFE)	20 mL	00350821015088	Grey	No	
011	0908_MMV124_221109	HDPE (no PTFE)	20 mL	00350821014896	Grey	No	
011	0908_MMV124_221109	HDPE (no PTFE)	20 mL	00350821014955	Grey	No	
011	0908_MMV124_221109	HDPE (no PTFE)	20 mL	00350821015121	Grey	No	
012	0908_MMV125D_221109	HDPE (no PTFE)	20 mL	00350821015045	Grey	No	
012	0908_MMV125D_221109	HDPE (no PTFE)	20 mL	00350821015151	Grey	No	
012	0908_MMV125D_221109	HDPE (no PTFE)	20 mL	00350821015078	Grey	No	
012	0908_MMV125D_221109	HDPE (no PTFE)	20 mL	00350821014990	Grey	No	
013	0908_MMV125S_221109	HDPE (no PTFE)	20 mL	00350821014912	Grey	No	
013	0908_MMV125S_221109	HDPE (no PTFE)	20 mL	00350821015112	Grey	No	
013	0908_MMV125S_221109	HDPE (no PTFE)	20 mL	00350821015157	Grey	No	
014	0908_MMV123_221108	HDPE (no PTFE)	20 mL	00350522015529	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:

DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS:	LABORATORY USE ONLY (Circle)
5 Days	Custody Seal intact? Yes No N/A
Biohazard info:	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	Random Sample Temperature on Receipt: C
	Other comments:

ID	DESCRIPTION	VOLUME	CONTAINER	DATE TIME	STATUS	REMARKS
014	0908_MW123_221108	20 mL	HDPE (no PTFE)	00350522015391	Grey	No
014	0908_MW123_221108	20 mL	HDPE (no PTFE)	00350522015336	Grey	No
014	0908_MW123_221108	20 mL	HDPE (no PTFE)	00350522015490	Grey	No
015	0908_MW126S_221109	20 mL	HDPE (no PTFE)	00350821015180	Grey	No
015	0908_MW126S_221109	20 mL	HDPE (no PTFE)	00350821015008	Grey	No
015	0908_MW126S_221109	20 mL	HDPE (no PTFE)	00350821015139	Grey	No
015	0908_MW126S_221109	20 mL	HDPE (no PTFE)	00350821015168	Grey	No
016	0908_MW128D_221107	20 mL	HDPE (no PTFE)	00350821015781	Grey	No
016	0908_MW128D_221107	20 mL	HDPE (no PTFE)	00350821015664	Grey	No
016	0908_MW128D_221107	20 mL	HDPE (no PTFE)	00350821015593	Grey	No
016	0908_MW128D_221107	20 mL	HDPE (no PTFE)	00350821015538	Grey	No
017	0908_MW128S_221107	20 mL	HDPE (no PTFE)	00350522040085	Grey	No
017	0908_MW128S_221107	20 mL	HDPE (no PTFE)	00350522039959	Grey	No
017	0908_MW128S_221107	20 mL	HDPE (no PTFE)	00350522039955	Grey	No
017	0908_MW128S_221107	20 mL	HDPE (no PTFE)	00350522039847	Grey	No
018	0908_MW130D_221108	20 mL	HDPE (no PTFE)	00350522015250	Grey	No
018	0908_MW130D_221108	20 mL	HDPE (no PTFE)	00350522015703	Grey	No
018	0908_MW130D_221108	20 mL	HDPE (no PTFE)	00350522015499	Grey	No
018	0908_MW130D_221108	20 mL	HDPE (no PTFE)	00350522015545	Grey	No
018	0908_MW130D_221108	20 mL	HDPE (no PTFE)	00350522015542	Grey	No
019	0908_MW130S_221108	20 mL	HDPE (no PTFE)	003505220155216	Grey	No
019	0908_MW130S_221108	20 mL	HDPE (no PTFE)	00350522015555	Grey	No
019	0908_MW130S_221108	20 mL	HDPE (no PTFE)	00350522015217	Grey	No
019	0908_MW130S_221108	20 mL	HDPE (no PTFE)	00350821015778	Grey	No
020	0908_MW132D_221108	20 mL	HDPE (no PTFE)	00350821015619	Grey	No
020	0908_MW132D_221108	20 mL	HDPE (no PTFE)	00350821015551	Grey	No
021	0908_MW132S_221108	20 mL	HDPE (no PTFE)	00350821015703	Grey	No

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williantown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS : 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard info:		Custody Seal Intact? Yes No N/A					
		Free ice / frozen ice bricks present upon receipt? Yes No N/A					
		Random Sample Temperature on Receipt: C					
		Other comments:					
021	0908_MW132S_221108	HDPE (no PTFE)	20 mL	00350821015531	Grey	No	
021	0908_MW132S_221108	HDPE (no PTFE)	20 mL	00350821015634	Grey	No	
021	0908_MW132S_221108	HDPE (no PTFE)	20 mL	00350821015777	Grey	No	
022	0908_MW146AD_221109	HDPE (no PTFE)	20 mL	00350821015018	Grey	No	
022	0908_MW146AD_221109	HDPE (no PTFE)	20 mL	00350821015039	Grey	No	
022	0908_MW146AD_221109	HDPE (no PTFE)	20 mL	00350821015043	Grey	No	
023	0908_MW146S_221109	HDPE (no PTFE)	20 mL	00350821015063	Grey	No	
023	0908_MW146S_221109	HDPE (no PTFE)	20 mL	00350821015027	Grey	No	
023	0908_MW146S_221109	HDPE (no PTFE)	20 mL	00350821014996	Grey	No	
024	0908_MW156D_221108	HDPE (no PTFE)	20 mL	00350821015609	Grey	No	
024	0908_MW156D_221108	HDPE (no PTFE)	20 mL	00350522040078	Grey	No	
024	0908_MW156D_221108	HDPE (no PTFE)	20 mL	00350522039903	Grey	No	
024	0908_MW156D_221108	HDPE (no PTFE)	20 mL	00350821015708	Grey	No	
025	0908_MW160_221108	HDPE (no PTFE)	20 mL	00350821015554	Grey	No	
025	0908_MW160_221108	HDPE (no PTFE)	20 mL	00350522039667	Grey	No	
025	0908_MW160_221108	HDPE (no PTFE)	20 mL	00350522040096	Grey	No	
025	0908_MW160_221108	HDPE (no PTFE)	20 mL	00350821015751	Grey	No	
026	0908_MW162D_221107	HDPE (no PTFE)	20 mL	00350821015744	Grey	No	
026	0908_MW162D_221107	HDPE (no PTFE)	20 mL	00350821015621	Grey	No	
026	0908_MW162D_221107	HDPE (no PTFE)	20 mL	00350821015654	Grey	No	
027	0908_MW162S_221107	HDPE (no PTFE)	20 mL	00350821015792	Grey	No	
027	0908_MW162S_221107	HDPE (no PTFE)	20 mL	00350821015772	Grey	No	
027	0908_MW162S_221107	HDPE (no PTFE)	20 mL	00350821015795	Grey	No	
027	0908_MW162S_221107	HDPE (no PTFE)	20 mL	00350821015629	Grey	No	
028	0908_MW163_221107	HDPE (no PTFE)	20 mL	00350821015502	Grey	No	
028	0908_MW163_221107	HDPE (no PTFE)	20 mL	00350821015631	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMPROV24

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

Sample ID	Material	Volume	Barcode	Color	Seal Intact?	Temp on Receipt?	Other Comments
028	0908_MM163_221107	20 mL	00350821015503	Grey	No		
028	0908_MM163_221107	20 mL	00350821015753	Grey	No		
029	0908_MM166_221109	20 mL	00350821015588	Grey	No		
029	0908_MM166_221109	20 mL	00350821015577	Grey	No		
029	0908_MM166_221109	20 mL	00350821015769	Grey	No		
029	0908_MM166_221109	20 mL	00350821015782	Grey	No		
030	0908_MM167_221109	20 mL	00350821015152	Grey	No		
030	0908_MM167_221109	20 mL	00350821015186	Grey	No		
030	0908_MM167_221109	20 mL	00350821015091	Grey	No		
030	0908_MM167_221109	20 mL	00350821015142	Grey	No		
031	0908_MM168_221109	20 mL	00350821015529	Grey	No		
031	0908_MM168_221109	20 mL	00350821015732	Grey	No		
031	0908_MM168_221109	20 mL	00350821015737	Grey	No		
031	0908_MM168_221109	20 mL	00350821015535	Grey	No		
031	0908_MM168_221109	20 mL	00350821015556	Grey	No		
032	0908_MM169D_221109	20 mL	00350821015693	Grey	No		
032	0908_MM169D_221109	20 mL	00350821015679	Grey	No		
032	0908_MM169D_221109	20 mL	00350821015787	Grey	No		
032	0908_MM169D_221109	20 mL	00350821015106	Grey	No		
033	0908_MM169S_221109	20 mL	00350821015069	Grey	No		
033	0908_MM169S_221109	20 mL	00350821014910	Grey	No		
033	0908_MM169S_221109	20 mL	00350821014905	Grey	No		
034	0908_MM172_221110	20 mL	00350821015720	Grey	No		
034	0908_MM172_221110	20 mL	00350821015523	Grey	No		
034	0908_MM172_221110	20 mL	00350821015605	Grey	No		
034	0908_MM172_221110	20 mL	00350821015532	Grey	No		
035	0908_MM175D_221110	20 mL	00350821014922	Grey	No		



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact?   
 Free ice / frozen ice bricks present upon receipt?   
 Random Sample Temperature on Receipt:   
 Other comments:

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard info:		Custody Seal Intact? <input type="checkbox"/>					
		Free ice / frozen ice bricks present upon receipt? <input type="checkbox"/>					
		Random Sample Temperature on Receipt: <input type="checkbox"/>					
		Other comments:					
035	0908_MW179D_221110	HDPE (no PTFE)	20 mL	00350821014968	Grey	No	
035	0908_MW175D_221110	HDPE (no PTFE)	20 mL	00350821014914	Grey	No	
035	0908_MW175D_221110	HDPE (no PTFE)	20 mL	00350821014963	Grey	No	
036	0908_MW178_221109	HDPE (no PTFE)	20 mL	00350821015624	Grey	No	
036	0908_MW178_221109	HDPE (no PTFE)	20 mL	00350821015638	Grey	No	
036	0908_MW178_221109	HDPE (no PTFE)	20 mL	00350821015595	Grey	No	
036	0908_MW178_221109	HDPE (no PTFE)	20 mL	00350821015506	Grey	No	
037	0908_MW179D_221110	HDPE (no PTFE)	20 mL	00350821015789	Grey	No	
037	0908_MW179D_221110	HDPE (no PTFE)	20 mL	00350821015667	Grey	No	
037	0908_MW179D_221110	HDPE (no PTFE)	20 mL	00350821015576	Grey	No	
038	0908_MW179S_221110	HDPE (no PTFE)	20 mL	00350821015768	Grey	No	
038	0908_MW179S_221110	HDPE (no PTFE)	20 mL	00350821015729	Grey	No	
038	0908_MW179S_221110	HDPE (no PTFE)	20 mL	00350821015628	Grey	No	
038	0908_MW179S_221110	HDPE (no PTFE)	20 mL	00350821015642	Grey	No	
039	0908_MW196_221109	HDPE (no PTFE)	20 mL	00350522039890	Grey	No	
039	0908_MW196_221109	HDPE (no PTFE)	20 mL	00350522039941	Grey	No	
039	0908_MW196_221109	HDPE (no PTFE)	20 mL	00350821015600	Grey	No	
039	0908_MW196_221109	HDPE (no PTFE)	20 mL	00350821015579	Grey	No	
040	0908_MW198_221109	HDPE (no PTFE)	20 mL	00350821015540	Grey	No	
040	0908_MW198_221109	HDPE (no PTFE)	20 mL	00350821015731	Grey	No	
040	0908_MW198_221109	HDPE (no PTFE)	20 mL	00350821015790	Grey	No	
040	0908_MW198_221109	HDPE (no PTFE)	20 mL	00350821015590	Grey	No	
041	0908_MW202D_221110	HDPE (no PTFE)	20 mL	00350821015041	Grey	No	
041	0908_MW202D_221110	HDPE (no PTFE)	20 mL	00350821015029	Grey	No	
041	0908_MW202D_221110	HDPE (no PTFE)	20 mL	00350821014958	Grey	No	
041	0908_MW202D_221110	HDPE (no PTFE)	20 mL	00350821014997	Grey	No	
042	0908_MW202S_221110	HDPE (no PTFE)	20 mL	00350821014949	Grey	No	

**CHAIN OF CUSTODY**  
ALS) COCH: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE: [REDACTED]

Random Sample Temperature on Receipt:  
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)	
Biohazard info:		Custody Seal Intact? Yes No N/A	
		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
		Random Sample Temperature on Receipt: C	

ID	Sample ID	Volume	Material	Color	Result
042	0908_MW202S_221110	20 mL	HDPE (no PTFE)	Grey	No
042	0908_MW202S_221110	20 mL	HDPE (no PTFE)	Grey	No
042	0908_MW202S_221110	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
043	0908_MW208_221108	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
044	0908_MW212_221111	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
045	0908_MW232D_221108	20 mL	HDPE (no PTFE)	Grey	No
046	0908_MW232S_221108	20 mL	HDPE (no PTFE)	Grey	No
046	0908_MW232S_221108	20 mL	HDPE (no PTFE)	Grey	No
046	0908_MW232S_221108	20 mL	HDPE (no PTFE)	Grey	No
046	0908_MW232S_221108	20 mL	HDPE (no PTFE)	Grey	No
046	0908_MW232S_221108	20 mL	HDPE (no PTFE)	Grey	No
047	0908_MW240D_221110	20 mL	HDPE (no PTFE)	Grey	No
047	0908_MW240D_221110	20 mL	HDPE (no PTFE)	Grey	No
047	0908_MW240D_221110	20 mL	HDPE (no PTFE)	Grey	No
047	0908_MW240D_221110	20 mL	HDPE (no PTFE)	Grey	No
047	0908_MW240D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No
048	0908_MW241D_221110	20 mL	HDPE (no PTFE)	Grey	No

**CHAIN OF CUSTODY**  
ALS) COCH: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0908v4

SAMPLER MOBILE

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:

DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

ID	Sample ID	Volume	Container	Color	Result
049	0908_MW241S_221110	20 ml	HDPE (no PTFE)	Grey	No
049	0908_MW241S_221110	20 ml	HDPE (no PTFE)	Grey	No
049	0908_MW241S_221110	20 ml	HDPE (no PTFE)	Grey	No
049	0908_MW241S_221110	20 ml	HDPE (no PTFE)	Grey	No
050	0908_MW244D_221109	20 ml	HDPE (no PTFE)	Grey	No
050	0908_MW244D_221109	20 ml	HDPE (no PTFE)	Grey	No
050	0908_MW244D_221109	20 ml	HDPE (no PTFE)	Grey	No
050	0908_MW244D_221109	20 ml	HDPE (no PTFE)	Grey	No
050	0908_MW244D_221109	20 ml	HDPE (no PTFE)	Grey	No
051	0908_MW244S_221109	20 ml	HDPE (no PTFE)	Grey	No
051	0908_MW244S_221109	20 ml	HDPE (no PTFE)	Grey	No
051	0908_MW244S_221109	20 ml	HDPE (no PTFE)	Grey	No
051	0908_MW244S_221109	20 ml	HDPE (no PTFE)	Grey	No
052	0908_MW247D_221108	20 ml	HDPE (no PTFE)	Grey	No
052	0908_MW247D_221108	20 ml	HDPE (no PTFE)	Grey	No
052	0908_MW247D_221108	20 ml	HDPE (no PTFE)	Grey	No
052	0908_MW247D_221108	20 ml	HDPE (no PTFE)	Grey	No
053	0908_MW247S_221108	20 ml	HDPE (no PTFE)	Grey	No
053	0908_MW247S_221108	20 ml	HDPE (no PTFE)	Grey	No
053	0908_MW247S_221108	20 ml	HDPE (no PTFE)	Grey	No
053	0908_MW247S_221108	20 ml	HDPE (no PTFE)	Grey	No
054	0908_MW256D_221107	20 ml	HDPE (no PTFE)	Grey	No
054	0908_MW256D_221107	20 ml	HDPE (no PTFE)	Grey	No
054	0908_MW256D_221107	20 ml	HDPE (no PTFE)	Grey	No
054	0908_MW256D_221107	20 ml	HDPE (no PTFE)	Grey	No
055	0908_MW256S_221107	20 ml	HDPE (no PTFE)	Grey	No
055	0908_MW256S_221107	20 ml	HDPE (no PTFE)	Grey	No
055	0908_MW256S_221107	20 ml	HDPE (no PTFE)	Grey	No

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)		Yes	No	N/A
Custody Seal intact?				
Free ice / frozen ice bricks present upon receipt?				
Random Sample Temperature on Receipt:				
Other comments:				

ID	Material	Volume	Barcode	Color	Seal Intact?	Temp OK?	Comments
065	0908_MW256S_221107	20 mL	00350821015793	Grey	No		
066	0908_MW257D_221107	20 mL	00350821015752	Grey	No		
066	0908_MW257D_221107	20 mL	00350821015508	Grey	No		
066	0908_MW257D_221107	20 mL	00350821015500	Grey	No		
066	0908_MW257D_221107	20 mL	00350821015762	Grey	No		
057	0908_MW257S_221107	20 mL	00350821015527	Grey	No		
057	0908_MW257S_221107	20 mL	00350821015555	Grey	No		
057	0908_MW257S_221107	20 mL	00350821015764	Grey	No		
057	0908_MW257S_221107	20 mL	00350821015645	Grey	No		
057	0908_MW257S_221107	20 mL	00350821015516	Grey	No		
058	0908_MW258D_221107	20 mL	00350821015700	Grey	No		
058	0908_MW258D_221107	20 mL	00350821015627	Grey	No		
058	0908_MW258D_221107	20 mL	00350821015511	Grey	No		
059	0908_MW258S_221107	20 mL	00350522015669	Grey	No		
059	0908_MW258S_221107	20 mL	00350821015625	Grey	No		
059	0908_MW258S_221107	20 mL	00350821015742	Grey	No		
059	0908_MW258S_221107	20 mL	00350522015468	Grey	No		
060	0908_MW260D_221108	20 mL	00350522015565	Grey	No		
060	0908_MW260D_221108	20 mL	00350522015218	Grey	No		
060	0908_MW260D_221108	20 mL	00350522015544	Grey	No		
060	0908_MW260D_221108	20 mL	00350522015285	Grey	No		
061	0908_MW260S_221108	20 mL	00350522015267	Grey	No		
061	0908_MW260S_221108	20 mL	00350522015285	Grey	No		
061	0908_MW260S_221108	20 mL	00350522015535	Grey	No		
062	0908_MW260S_221108	20 mL	00350522015595	Grey	No		
062	0908_MW263D_221108	20 mL	00350522015482	Grey	No		
062	0908_MW263D_221108	20 mL	00350522015635	Grey	No		

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
Custody Seal intact? Yes No N/A  
Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard Info:		Custody Seal intact?					
HDPE (no PTFE)		Free Ice / frozen ice bricks present upon receipt?					
062	0908_MW263D_221108	20 mL	00350522015420	Grey	No		
063	0908_MW263S_221108	20 mL	00350522015548	Grey	No		
063	0908_MW263S_221108	20 mL	00350522015454	Grey	No		
063	0908_MW263S_221108	20 mL	00350522015644	Grey	No		
063	0908_MW263S_221108	20 mL	00350522015579	Grey	No		
064	0908_MW278D_221109	20 mL	00350821015007	Grey	No		
064	0908_MW278D_221109	20 mL	00350821015014	Grey	No		
064	0908_MW278D_221109	20 mL	00350821015155	Grey	No		
064	0908_MW278D_221109	20 mL	00350821015096	Grey	No		
064	0908_MW278D_221109	20 mL	00350821015197	Grey	No		
065	0908_MW278S_221109	20 mL	00350821014939	Grey	No		
065	0908_MW278S_221109	20 mL	00350821015025	Grey	No		
065	0908_MW278S_221109	20 mL	00350821014981	Grey	No		
065	0908_MW278S_221109	20 mL	00350821015156	Grey	No		
066	0908_MW279S_221107	20 mL	00350821015498	Grey	No		
066	0908_MW279S_221107	20 mL	00350821015746	Grey	No		
066	0908_MW279S_221107	20 mL	00350821015537	Grey	No		
066	0908_MW279S_221107	20 mL	00350821015015	Grey	No		
067	0908_MW280S_221111	20 mL	00350821014991	Grey	No		
067	0908_MW280S_221111	20 mL	00350821014998	Grey	No		
067	0908_MW280S_221111	20 mL	00350821015004	Grey	No		
067	0908_MW280S_221111	20 mL	00350821015562	Grey	No		
068	0908_MW281S_221110	20 mL	00350821015718	Grey	No		
068	0908_MW281S_221110	20 mL	00350821015633	Grey	No		
068	0908_MW281S_221110	20 mL	00350821015780	Grey	No		
068	0908_MW281S_221110	20 mL	00350821015719	Grey	No		
069	0908_MW282S_221110	20 mL	00350821015722	Grey	No		



# CHAIN OF CUSTODY

ALS) COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/ALSCOMMA0002

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days			
Biohazard Info:			
076	0908_MW466_221110 HDPE (no PTFE) 20 mL 00350821014938	Grey	No
076	0908_MW466_221110 HDPE (no PTFE) 20 mL 00350821014938	Grey	No
076	0908_MW466_221110 HDPE (no PTFE) 20 mL 00350821014933	Grey	No
077	0908_MW468_221110 HDPE (no PTFE) 20 mL 00350821014898	Grey	No
077	0908_MW468_221110 HDPE (no PTFE) 20 mL 00350821014966	Grey	No
077	0908_MW468_221110 HDPE (no PTFE) 20 mL 00350821014945	Grey	No
077	0908_MW468_221110 HDPE (no PTFE) 20 mL 00350522015586	Grey	No
078	0908_MW829_221108 HDPE (no PTFE) 20 mL 00350522015709	Grey	No
078	0908_MW829_221108 HDPE (no PTFE) 20 mL 00350522015371	Grey	No
078	0908_MW829_221108 HDPE (no PTFE) 20 mL 00350522015718	Grey	No
078	0908_MW829_221108 HDPE (no PTFE) 20 mL 00620322023664	Grey	No
079	0908_SDO01_221108 HDPE Soil Jar 200 mL 00620322023693	Grey	No
080	0908_SDO05_221105 HDPE Soil Jar 200 mL 00620322023757	Grey	No
081	0908_SDO06_221108 HDPE Soil Jar 200 mL 00620322023680	Grey	No
082	0908_SDO07_221108 HDPE Soil Jar 200 mL 00620322023718	Grey	No
083	0908_SDO09_221108 HDPE Soil Jar 200 mL 00620322023703	Grey	No
084	0908_SDO14_221107 HDPE Soil Jar 200 mL 00620322023682	Grey	No
085	0908_SDO23_221108 HDPE Soil Jar 200 mL 00620322023704	Grey	No
086	0908_SDO24_221108 HDPE Soil Jar 200 mL 00620322023696	Grey	No
087	0908_SDO47_221110 HDPE Soil Jar 200 mL 00620322023677	Grey	No
088	0908_SDO48_221110 HDPE Soil Jar 200 mL 00620322023674	Grey	No
089	0908_SDO55_221110 HDPE Soil Jar 200 mL 00620322023674	Grey	No
090	0908_SDO59_221109 HDPE Soil Jar 200 mL 00620322023674	Grey	No
091	0908_SDO60_221109 HDPE Soil Jar 200 mL 00620322023674	Grey	No
092	0908_SDO62_221107 HDPE Soil Jar 200 mL 00620322023674	Grey	No
093	0908_SDO79_221107 HDPE Soil Jar 200 mL 00620322023674	Grey	No
094	0908_SDO81_221108 HDPE Soil Jar 200 mL 00620322023674	Grey	No



# CHAIN OF CUSTODY

ALS COC# 44620

ALS Laboratory ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0002

LABORATORY USE ONLY (Circle)  
Custody Seal intact?  
Free ice / frozen ice bricks present upon receipt?  
Random Sample Temperature on Receipt:  
Other comments:

Yes No N/A  
Yes No N/A

C

Item No	Sample ID	Sample Description	Volume	Color	Container ID	Seal Intact?	Free Ice?	Temp on Receipt	Comments
095	0908_SD108_221110	HDPE Soil Jar	200 mL	Grey	00620322104500	No			
096	0908_SD110_221110	HDPE Soil Jar	200 mL	Grey	00620322104528	No			
097	0908_SS101_221107	HDPE Soil Jar	200 mL	Grey	00620322023716	No			
098	0908_SS102_221107	HDPE Soil Jar	200 mL	Grey	00620322023691	No			
099	0908_SS103_221107	HDPE Soil Jar	200 mL	Grey	00620322023702	No			
100	0908_SS104_221110	HDPE Soil Jar	200 mL	Grey	00620322104503	No			
101	0908_SS105_221110	HDPE Soil Jar	200 mL	Grey	00620322036285	No			
102	0908_SS106_221107	HDPE Soil Jar	200 mL	Grey	00621121013723	No			
103	0908_SS107_221110	HDPE Soil Jar	200 mL	Grey	00621121013732	No			
104	0908_SS108_221109	HDPE Soil Jar	200 mL	Grey	00620322023711	No			
105	0908_SS109_221109	HDPE Soil Jar	200 mL	Grey	00620322023681	No			
106	0908_SS110_221107	HDPE Soil Jar	200 mL	Grey	00620322104493	No			
107	0908_SS112_221108	HDPE Soil Jar	200 mL	Grey	00620322104465	No			
108	0908_SW001_221108	HDPE (no PTFE)	20 mL	Grey	00350821015695	No			
108	0908_SW001_221108	HDPE (no PTFE)	20 mL	Grey	00350821015659	No			
108	0908_SW001_221108	HDPE (no PTFE)	20 mL	Grey	00350821015563	No			
108	0908_SW001_221108	HDPE (no PTFE)	20 mL	Grey	00350821015684	No			
109	0908_SW005_221108	HDPE (no PTFE)	20 mL	Grey	00350522015708	No			
109	0908_SW005_221108	HDPE (no PTFE)	20 mL	Grey	00350522015647	No			
109	0908_SW005_221108	HDPE (no PTFE)	20 mL	Grey	00350522015506	No			
109	0908_SW005_221108	HDPE (no PTFE)	20 mL	Grey	00350522015415	No			
110	0908_SW006_221108	HDPE (no PTFE)	20 mL	Grey	00350522015431	No			
110	0908_SW006_221108	HDPE (no PTFE)	20 mL	Grey	00350522015468	No			
110	0908_SW006_221108	HDPE (no PTFE)	20 mL	Grey	00350522015630	No			
111	0908_SW007_221108	HDPE (no PTFE)	20 mL	Grey	00350522015327	No			
111	0908_SW007_221108	HDPE (no PTFE)	20 mL	Grey	00350522015325	No			
111	0908_SW007_221108	HDPE (no PTFE)	20 mL	Grey	00350522015462	No			





# CHAIN OF CUSTODY

ALS COC# 44620

ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP

SITE: 0908\_Williantown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]

QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0002

SAMPLER MOBILE: [REDACTED]

Other comments: C

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt? Yes No N/A

Other comments: C

Item ID	Material	Volume	Color	Seal Intact?	Temp on Receipt?	Other Comments
111	0908_SW007_221108	20 mL	Grey	No		
112	0908_SW009_221108	20 mL	Grey	No		
112	0908_SW009_221108	20 mL	Grey	No		
112	0908_SW009_221108	20 mL	Grey	No		
112	0908_SW009_221108	20 mL	Grey	No		
113	0908_SW014_221107	20 mL	Grey	No		
113	0908_SW014_221107	20 mL	Grey	No		
113	0908_SW014_221107	20 mL	Grey	No		
113	0908_SW014_221107	20 mL	Grey	No		
114	0908_SW023_221108	20 mL	Grey	No		
114	0908_SW023_221108	20 mL	Grey	No		
114	0908_SW023_221108	20 mL	Grey	No		
114	0908_SW023_221108	20 mL	Grey	No		
114	0908_SW023_221108	20 mL	Grey	No		
115	0908_SW024_221108	20 mL	Grey	No		
115	0908_SW024_221108	20 mL	Grey	No		
115	0908_SW024_221108	20 mL	Grey	No		
115	0908_SW024_221108	20 mL	Grey	No		
115	0908_SW024_221108	20 mL	Grey	No		
116	0908_SW047_221110	20 mL	Grey	No		
116	0908_SW047_221110	20 mL	Grey	No		
116	0908_SW047_221110	20 mL	Grey	No		
116	0908_SW047_221110	20 mL	Grey	No		
116	0908_SW047_221110	20 mL	Grey	No		
117	0908_SW048_221110	20 mL	Grey	No		
117	0908_SW048_221110	20 mL	Grey	No		
117	0908_SW048_221110	20 mL	Grey	No		
117	0908_SW048_221110	20 mL	Grey	No		
117	0908_SW048_221110	20 mL	Grey	No		
118	0908_SW055_221110	20 mL	Grey	No		
118	0908_SW055_221110	20 mL	Grey	No		
118	0908_SW055_221110	20 mL	Grey	No		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: -C  
 Other comments:

Item No	Sample ID	Volume	Material	Container	Color	Seal Intact?	Free Ice?	Temp on Receipt
118	0908_SW055_221110	20 mL	HDPE (no PTFE)	00350821015038	Grey	No	No	-C
118	0908_SW055_221110	20 mL	HDPE (no PTFE)	00350821014972	Grey	No	No	-C
119	0908_SW059_221109	20 mL	HDPE (no PTFE)	00350821015024	Grey	No	No	-C
119	0908_SW059_221109	20 mL	HDPE (no PTFE)	00350821014895	Grey	No	No	-C
119	0908_SW059_221109	20 mL	HDPE (no PTFE)	00350821014911	Grey	No	No	-C
119	0908_SW059_221109	20 mL	HDPE (no PTFE)	00350821015202	Grey	No	No	-C
120	0908_SW060_221109	20 mL	HDPE (no PTFE)	00350821015511	Grey	No	No	-C
120	0908_SW060_221109	20 mL	HDPE (no PTFE)	00350821015639	Grey	No	No	-C
120	0908_SW060_221109	20 mL	HDPE (no PTFE)	00350821015536	Grey	No	No	-C
120	0908_SW060_221109	20 mL	HDPE (no PTFE)	00350821015766	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015550	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015681	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015699	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015618	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015546	Grey	No	No	-C
121	0908_SW062_221107	20 mL	HDPE (no PTFE)	00350821015549	Grey	No	No	-C
122	0908_SW079_221107	20 mL	HDPE (no PTFE)	00350822040109	Grey	No	No	-C
122	0908_SW079_221107	20 mL	HDPE (no PTFE)	00350522040071	Grey	No	No	-C
122	0908_SW079_221107	20 mL	HDPE (no PTFE)	00350821015519	Grey	No	No	-C
122	0908_SW079_221107	20 mL	HDPE (no PTFE)	00350821015643	Grey	No	No	-C
123	0908_SW081_221108	20 mL	HDPE (no PTFE)	00350821015608	Grey	No	No	-C
123	0908_SW081_221108	20 mL	HDPE (no PTFE)	00350821015660	Grey	No	No	-C
123	0908_SW081_221108	20 mL	HDPE (no PTFE)	00350821015046	Grey	No	No	-C
124	0908_SW108_221110	20 mL	HDPE (no PTFE)	00350821015019	Grey	No	No	-C
124	0908_SW108_221110	20 mL	HDPE (no PTFE)	00350821015084	Grey	No	No	-C
124	0908_SW108_221110	20 mL	HDPE (no PTFE)	00350821015074	Grey	No	No	-C
125	0908_SW110_221110	20 mL	HDPE (no PTFE)	00350821014957	Grey	No	No	-C

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002\_4

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard Info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

ID	Sample ID	Volume	Color	Seal Intact?	Temp on Receipt?
125	0908_SW110_221110	20 mL	Grey	No	
125	0908_SW110_221110	20 mL	Grey	No	
125	0908_SW110_221110	20 mL	Grey	No	
126	0908_QC100_221107	20 mL	Grey	No	
126	0908_QC100_221107	20 mL	Grey	No	
126	0908_QC100_221107	20 mL	Grey	No	
126	0908_QC100_221107	20 mL	Grey	No	
126	0908_QC100_221107	20 mL	Grey	No	
127	0908_QC102_221107	200 mL	Grey	No	
128	0908_QC104_221107	200 mL	Grey	No	
128	0908_QC106_221107	20 mL	Grey	No	
129	0908_QC106_221107	20 mL	Grey	No	
129	0908_QC106_221107	20 mL	Grey	No	
129	0908_QC106_221107	20 mL	Grey	No	
129	0908_QC106_221107	20 mL	Grey	No	
129	0908_QC106_221107	200 mL	Grey	No	
130	0908_QC107_221108	20 mL	Grey	No	
131	0908_QC108_221108	20 mL	Grey	No	
131	0908_QC108_221108	20 mL	Grey	No	
131	0908_QC108_221108	20 mL	Grey	No	
131	0908_QC108_221108	20 mL	Grey	No	
131	0908_QC108_221108	20 mL	Grey	No	
132	0908_QC109_221109	20 mL	Grey	No	
132	0908_QC109_221109	20 mL	Grey	No	
132	0908_QC109_221109	20 mL	Grey	No	
132	0908_QC109_221109	20 mL	Grey	No	
133	0908_QC110_221108	20 mL	Grey	No	
133	0908_QC110_221108	20 mL	Grey	No	
133	0908_QC110_221108	20 mL	Grey	No	
134	0908_QC111_221109	200 mL	Grey	No	



# CHAIN OF CUSTODY

ALS COC#: 44620 ALS Laboratory ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Willamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021/AECOMAU/0908/2022

LABORATORY USE ONLY (Circle)

Custody Seal Intact?  Yes  No  N/A

Free ice / frozen ice bricks present upon receipt?  Yes  No  N/A

Random Sample Temperature on Receipt:  C

Other comments:

Item No	Sample ID	Volume	Matrix	Color	Remarks
135	0908_QC112_221109	20 mL	HDPE (no PTFE)	Grey	No
135	0908_QC112_221109	20 mL	HDPE (no PTFE)	Grey	No
135	0908_QC112_221109	20 mL	HDPE (no PTFE)	Grey	No
135	0908_QC112_221109	20 mL	HDPE (no PTFE)	Grey	No
136	0908_QC113_221109	20 mL	HDPE (no PTFE)	Grey	No
136	0908_QC113_221109	20 mL	HDPE (no PTFE)	Grey	No
136	0908_QC113_221109	20 mL	HDPE (no PTFE)	Grey	No
136	0908_QC113_221109	20 mL	HDPE (no PTFE)	Grey	No
137	0908_QC114_221110	20 mL	HDPE (no PTFE)	Grey	No
137	0908_QC114_221110	20 mL	HDPE (no PTFE)	Grey	No
137	0908_QC114_221110	20 mL	HDPE (no PTFE)	Grey	No
137	0908_QC114_221110	20 mL	HDPE (no PTFE)	Grey	No
138	0908_QC115_221110	20 mL	HDPE (no PTFE)	Grey	No
138	0908_QC115_221110	20 mL	HDPE (no PTFE)	Grey	No
138	0908_QC115_221110	20 mL	HDPE (no PTFE)	Grey	No
138	0908_QC115_221110	20 mL	HDPE (no PTFE)	Grey	No
139	0908_QC300_221107	20 mL	HDPE (no PTFE)	Grey	No
139	0908_QC300_221107	20 mL	HDPE (no PTFE)	Grey	No
139	0908_QC300_221107	20 mL	HDPE (no PTFE)	Grey	No
139	0908_QC300_221107	20 mL	HDPE (no PTFE)	Grey	No
140	0908_QC301_221107	20 mL	HDPE (no PTFE)	Grey	No
140	0908_QC301_221107	20 mL	HDPE (no PTFE)	Grey	No
140	0908_QC301_221107	20 mL	HDPE (no PTFE)	Grey	No
140	0908_QC301_221107	20 mL	HDPE (no PTFE)	Grey	No
141	0908_QC302_221107	20 mL	HDPE (no PTFE)	Grey	No
141	0908_QC302_221107	20 mL	HDPE (no PTFE)	Grey	No

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19-V4 60612562\_2.1 / ES2021AECOMAU0002

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt:   
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)					
Biohazard info:		Custody Seal intact?					
		Free ice / frozen ice bricks present upon receipt?					
		Random Sample Temperature on Receipt:					
		Other comments:					
141	0908_QC307_221107	HDPE (no PTFE)	20 mL	00350522015367	Grey	No	
142	0908_QC303_221107	HDPE (no PTFE)	20 mL	00350821015143	Grey	No	
142	0908_QC303_221107	HDPE (no PTFE)	20 mL	00350821015002	Grey	No	
142	0908_QC303_221107	HDPE (no PTFE)	20 mL	00350821015123	Grey	No	
143	0908_QC304_221108	HDPE (no PTFE)	20 mL	00350821014999	Grey	No	
143	0908_QC304_221108	HDPE (no PTFE)	20 mL	00350821014921	Grey	No	
143	0908_QC304_221108	HDPE (no PTFE)	20 mL	00350821014978	Grey	No	
143	0908_QC304_221108	HDPE (no PTFE)	20 mL	00350821014946	Grey	No	
143	0908_QC304_221108	HDPE (no PTFE)	20 mL	00350821015184	Grey	No	
144	0908_QC305_221108	HDPE (no PTFE)	20 mL	00350821015134	Grey	No	
144	0908_QC305_221108	HDPE (no PTFE)	20 mL	00350821014948	Grey	No	
144	0908_QC305_221108	HDPE (no PTFE)	20 mL	00350821015159	Grey	No	
145	0908_QC306_221108	HDPE (no PTFE)	20 mL	00350821015065	Grey	No	
145	0908_QC306_221108	HDPE (no PTFE)	20 mL	00350821014923	Grey	No	
145	0908_QC306_221108	HDPE (no PTFE)	20 mL	00350821014936	Grey	No	
145	0908_QC306_221108	HDPE (no PTFE)	20 mL	00350821014920	Grey	No	
146	0908_QC307_221109	HDPE (no PTFE)	20 mL	00350821014951	Grey	No	
146	0908_QC307_221109	HDPE (no PTFE)	20 mL	00350821014965	Grey	No	
146	0908_QC307_221109	HDPE (no PTFE)	20 mL	00350821015007	Grey	No	
146	0908_QC307_221109	HDPE (no PTFE)	20 mL	00350821014834	Grey	No	
147	0908_QC308_221109	HDPE (no PTFE)	20 mL	00350821014970	Grey	No	
147	0908_QC308_221109	HDPE (no PTFE)	20 mL	00350821015073	Grey	No	
148	0908_QC309_221110	HDPE (no PTFE)	20 mL	00350821015023	Grey	No	
148	0908_QC309_221110	HDPE (no PTFE)	20 mL	00350821015113	Grey	No	
148	0908_QC309_221110	HDPE (no PTFE)	20 mL	00350821015090	Grey	No	

# CHAIN OF CUSTODY

ALS) COC# 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williamtown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 V4 60612562\_2.1 / ES2021AECOMAU002

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:

DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS:	LABORATORY USE ONLY (Circle)
5 Days	<input type="checkbox"/> Custody Seal intact? <input type="checkbox"/> Free ice / frozen ice bricks present upon receipt? <input type="checkbox"/> Random Sample Temperature on Receipt: Other comments:
Biohazard info:	Yes No N/A Yes No N/A C

ID	Code	Material	Volume	Barcode	Color	Seal Intact?	Temp. on Receipt?
149	0908_QC310_221109	HDPE (no PTFE)	20 mL	00350821015020	Grey	No	
149	0908_QC310_221109	HDPE (no PTFE)	20 mL	00350821014924	Grey	No	
149	0908_QC310_221109	HDPE (no PTFE)	20 mL	00350821014952	Grey	No	
149	0908_QC310_221109	HDPE (no PTFE)	20 mL	00350821014937	Grey	No	
150	0908_QC311_221110	HDPE (no PTFE)	20 mL	00350821015044	Grey	No	
150	0908_QC311_221110	HDPE (no PTFE)	20 mL	00350821014986	Grey	No	
150	0908_QC311_221110	HDPE (no PTFE)	20 mL	00350821015051	Grey	No	
150	0908_QC311_221110	HDPE (no PTFE)	20 mL	00350821014984	Grey	No	
151	0908_QC312_221110	HDPE (no PTFE)	20 mL	00350821015129	Grey	No	
151	0908_QC312_221110	HDPE (no PTFE)	20 mL	00350821014994	Grey	No	
151	0908_QC312_221110	HDPE (no PTFE)	20 mL	00350821015040	Grey	No	
151	0908_QC312_221110	HDPE (no PTFE)	20 mL	00350821014992	Grey	No	
152	0908_QC313_221111	HDPE (no PTFE)	20 mL	00350821015106	Grey	No	
152	0908_QC313_221111	HDPE (no PTFE)	20 mL	00350821015100	Grey	No	
152	0908_QC313_221111	HDPE (no PTFE)	20 mL	00350821015173	Grey	No	
152	0908_QC313_221111	HDPE (no PTFE)	20 mL	00350821015172	Grey	No	
153	0908_QC314_221110	HDPE (no PTFE)	20 mL	00350821015072	Grey	No	
153	0908_QC314_221110	HDPE (no PTFE)	20 mL	00350821015056	Grey	No	
153	0908_QC314_221110	HDPE (no PTFE)	20 mL	00350821015062	Grey	No	
153	0908_QC314_221110	HDPE (no PTFE)	20 mL	00350821015146	Grey	No	
154	0908_OTH075_221108	HDPE (no PTFE)	20 mL	00350522015583	Grey	No	
154	0908_OTH075_221108	HDPE (no PTFE)	20 mL	00350522015714	Grey	No	
154	0908_OTH075_221108	HDPE (no PTFE)	20 mL	00350522015549	Grey	No	
154	0908_OTH075_221108	HDPE (no PTFE)	20 mL	00350522015701	Grey	No	
155	0908_MW126D_221109	HDPE (no PTFE)	20 mL	00350821015149	Grey	No	
155	0908_MW126D_221109	HDPE (no PTFE)	20 mL	00350821015185	Grey	No	
155	0908_MW126D_221109	HDPE (no PTFE)	20 mL	00350821015067	Grey	No	



# CHAIN OF CUSTODY

ALS COC#: 44620 ALS Laboratory: ES Sydney

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: 0908\_Williantown

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Free ice / frozen ice bricks present upon receipt?

Random Sample Temperature on Receipt:

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

4

Yes No N/A  
Yes No N/A  
°C

Item ID	Sample ID	Material	Volume	Barcode	Color	Seal Intact?	Free Ice Present?	Temp on Receipt
155	0908_MMV126D_221109	HDPE (no PTFE)	20 mL	00350821014906	Grey	No	No	
156	0908_QC105_221110	HDPE (no PTFE)	20 mL	00350821015716	Grey	No	No	
156	0908_QC105_221110	HDPE (no PTFE)	20 mL	00350821015728	Grey	No	No	
156	0908_QC105_221110	HDPE (no PTFE)	20 mL	00350821015705	Grey	No	No	
156	0908_QC105_221110	HDPE (no PTFE)	20 mL	00350821015709	Grey	No	No	
157	0908_QC103_221110	HDPE (no PTFE)	20 mL	00350821015541	Grey	No	No	
157	0908_QC103_221110	HDPE (no PTFE)	20 mL	00350821015597	Grey	No	No	
157	0908_QC103_221110	HDPE (no PTFE)	20 mL	00350821015672	Grey	No	No	
157	0908_QC103_221110	HDPE (no PTFE)	20 mL	00350821015615	Grey	No	No	
157	0908_QC103_221110	HDPE (no PTFE)	20 mL	00350821015767	Grey	No	No	
158	0908_QC101_221110	HDPE (no PTFE)	20 mL	00350821015694	Grey	No	No	
158	0908_QC101_221110	HDPE (no PTFE)	20 mL	00350821015558	Grey	No	No	
158	0908_QC101_221110	HDPE (no PTFE)	20 mL	00350821015710	Grey	No	No	

Total Bottle Count: ALS: 525, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241524</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44835</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_week2</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>6</b> <b>No. of samples analysed</b> : <b>6</b>	<b>Page</b> : 1 of 9  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>  <b>Telephone</b> : <b>+61 2 8784 8555</b> <b>Date Samples Received</b> : <b>16-Nov-2022 16:35</b> <b>Date Analysis Commenced</b> : <b>18-Nov-2022</b> <b>Issue Date</b> : <b>12-Dec-2022 15:07</b>
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: 'PFHxS' result for sample #2 confirmed by duplicate analysis.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW134D_22111 4	0908_MW134I_22111 4	----	----	----
Sampling date / time				14-Nov-2022 09:52	14-Nov-2022 09:58	----	----	----
Compound	CAS Number	LOR	Unit	ES2241524-001 Result	ES2241524-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.04</b>	<b>0.03</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.02</b>	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW134D_22111 4	0908_MW134I_22111 4	----	----	----
Sampling date / time				14-Nov-2022 09:52	14-Nov-2022 09:58	----	----	----
Compound	CAS Number	LOR	Unit	ES2241524-001 Result	ES2241524-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.06</b>	<b>0.03</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.06</b>	<b>0.03</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.06</b>	<b>0.03</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>95.6</b>	<b>98.1</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>105</b>	<b>102</b>	----	----	----



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC315_221114	0908_QC316_221115	0908_QC317_221115	----	----
Sampling date / time				14-Nov-2022 16:44	15-Nov-2022 14:46	15-Nov-2022 14:48	----	----	
Compound	CAS Number	LOR	Unit	ES2241524-004	ES2241524-005	ES2241524-006	-----	-----	
				Result	Result	Result	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID		0908_QC315_221114	0908_QC316_221115	0908_QC317_221115	----	----
		Sampling date / time		14-Nov-2022 16:44	15-Nov-2022 14:46	15-Nov-2022 14:48	----	----
Compound	CAS Number	LOR	Unit	ES2241524-004	ES2241524-005	ES2241524-006	-----	-----
				Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.0	98.7	95.5	----	----
13C8-PFOA	----	0.02	%	98.4	107	100	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		0908_SS111_221115	----	----	----	----
		Sampling date / time		15-Nov-2022 10:04	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2241524-003	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	31.0	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS111_221115	----	----	----	----
Sampling date / time				15-Nov-2022 10:04	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2241524-003	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0006</b>	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0006</b>	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0006</b>	----	----	----	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>102</b>	----	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>98.0</b>	----	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241524</b>	<b>Page</b>	: 1 of 11
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44835	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_week2		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 6		
<b>No. of samples analysed</b>	: 6		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4712785)</b>									
ES2241378-001	Anonymous	EA055: Moisture Content	----	0.1	%	21.0	21.7	3.1	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4712003)</b>									
ES2241524-003	0908_SS111_221115	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0005	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003)</b>									
ES2241524-003	0908_SS111_221115	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	0908_SS111_221115	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4712003)</b>									
ES2241524-003	0908_SS111_221115	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003)</b>									



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	0908_SS111_221115	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710411)</b>									
ES2241445-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241524-002	0908_MW134I_221114	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710411)</b>									
ES2241445-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710411) - continued</b>									
ES2241445-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2241524-002	0908_MW134I_221114	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710411)</b>									
ES2241445-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241524-002	0908_MW134I_221114	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710411)</b>									
ES2241445-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.06	0.06	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241524-002	0908_MW134I_221114	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710411)</b>									
ES2241445-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.06	0.06	0.0	No Limit
ES2241524-002	0908_MW134I_221114	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.03	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.6	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	91.6	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	105	65.0	137	





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Acceptable Limits (%) Low High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	110	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		
						LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710411)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	106	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	98.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710411)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	103	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	111	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	113	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	99.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710411)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	112	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	97.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	110	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	122	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	98.2	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710411)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	107	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	102	64.0	140





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710411) - continued</b>									
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	102	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	88.6	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	0908_SS111_221115	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	97.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	116	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	106	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	115	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	106	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	97.2	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>							
ES2241524-003	0908_SS111_221115	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	118	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	114	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	111	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	127	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>					
ES2241524-003	0908_SS111_221115	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	115	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	127	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	120	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	120	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	121	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003) - continued</b>							
ES2241524-003	0908_SS111_221115	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	121	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	0908_SS111_221115	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	107	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	116	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	114	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	88.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710411)</b>							
ES2241445-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	112	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	108	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	104	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	101	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	118	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710411)</b>							
ES2241445-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	114	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	119	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	114	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	119	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	109	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	112	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	109	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	120	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	114	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710411)</b>							
ES2241445-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	98.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	118	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	117	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710411) - continued</b>							
ES2241445-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	113	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	116	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	101	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710411)</b>							
ES2241445-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	97.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	94.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	121	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	116	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241524	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_week2	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 6
Order number	: 60612562_2.1	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>HDPE Soil Jar (EA055)</b> 0908_SS111_221115	15-Nov-2022	----	----	----	18-Nov-2022	29-Nov-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SS111_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SS111_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SS111_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SS111_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SS111_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW134D_221114, 0908_QC315_221114	0908_MW134I_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC316_221115,	0908_QC317_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW134D_221114, 0908_QC315_221114	0908_MW134I_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC316_221115,	0908_QC317_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW134D_221114, 0908_QC315_221114	0908_MW134I_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC316_221115,	0908_QC317_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW134D_221114, 0908_QC315_221114	0908_MW134I_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC316_221115,	0908_QC317_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW134D_221114, 0908_QC315_221114	0908_MW134I_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC316_221115,	0908_QC317_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241524  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 44835  
Site : WLM\_week2  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2241524-003	15-Nov-2022 10:04	0908_SS111_221115	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241524-001	14-Nov-2022 09:52	0908_MW134D_221114	✓
ES2241524-002	14-Nov-2022 09:58	0908_MW134I_221114	✓
ES2241524-004	14-Nov-2022 16:44	0908_QC315_221114	✓
ES2241524-005	15-Nov-2022 14:46	0908_QC316_221115	✓
ES2241524-006	15-Nov-2022 14:48	0908_QC317_221115	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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**CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: WLM\_week2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

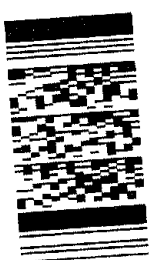
EMAIL REPORTS TO:  
EMAIL INVOICES TO:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MM134D_221114		14/11/2022 09:52 AM	Water	ALS: 4 Non ALS: 0	No		X		
002	0908_MM134I_221114		14/11/2022 09:58 AM	Water	ALS: 4 Non ALS: 0	No		X		
003	0908_SS111_221115		15/11/2022 10:04 AM	Soil	ALS: 1 Non ALS: 0	No	X			
004	0908_QC315_221114		14/11/2022 04:44 PM	Water	ALS: 4 Non ALS: 0	No		X		
005	0908_QC316_221115		15/11/2022 02:46 PM	Water	ALS: 4 Non ALS: 0	No		X		
006	0908_QC317_221115		15/11/2022 02:48 PM	Water	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
Sydney  
Work Order Reference  
**ES2241524**



Telephone : +61-2-8794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_week2

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 16/11/22 15:35

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015653	Grey	No	
001	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015624	Grey	No	
001	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015741	Grey	No	
001	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015680	Grey	No	
002	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015589	Grey	No	
002	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015630	Grey	No	
002	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015522	Grey	No	
002	0908_MM134D_221114	HDPE (no PTFE)	20 mL	00350821015704	Grey	No	
003	0908_SS111_221115	HDPE Soil Jar	200 mL	00620322023653	Grey	No	
004	0908_QC315_221114	HDPE (no PTFE)	20 mL	00352101040240	Grey	No	
004	0908_QC315_221114	HDPE (no PTFE)	20 mL	00350821015167	Grey	No	
004	0908_QC315_221114	HDPE (no PTFE)	20 mL	00350821015026	Grey	No	
004	0908_QC315_221114	HDPE (no PTFE)	20 mL	00350821015128	Grey	No	
005	0908_QC316_221115	HDPE (no PTFE)	20 mL	00352101040708	Grey	No	
005	0908_QC316_221115	HDPE (no PTFE)	20 mL	00352101040245	Grey	No	
005	0908_QC316_221115	HDPE (no PTFE)	20 mL	00350821014930	Grey	No	
005	0908_QC316_221115	HDPE (no PTFE)	20 mL	00350821014950	Grey	No	
006	0908_QC317_221115	HDPE (no PTFE)	20 mL	00350821015055	Grey	No	
006	0908_QC317_221115	HDPE (no PTFE)	20 mL	00350821015144	Grey	No	
006	0908_QC317_221115	HDPE (no PTFE)	20 mL	00350821014964	Grey	No	
006	0908_QC317_221115	HDPE (no PTFE)	20 mL	00350821015200	Grey	No	

Total Bottle Count: ALS: 21, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241526</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44850</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 16-Nov-2022 16:35 <b>Date Analysis Commenced</b> : 18-Nov-2022 <b>Issue Date</b> : 12-Dec-2022 13:26
--	---



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW139_221114	0908_POT107_22111 4	----	----	----
Sampling date / time				14-Nov-2022 12:57	14-Nov-2022 13:03	----	----	----
Compound	CAS Number	LOR	Unit	ES2241526-001	ES2241526-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.01</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<b>0.01</b>	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW139_221114	0908_POT107_22111 4	----	----	----
Sampling date / time				14-Nov-2022 12:57	14-Nov-2022 13:03	----	----	----
Compound	CAS Number	LOR	Unit	ES2241526-001	ES2241526-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.04</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.03</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.04</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>92.7</b>	<b>97.1</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>98.6</b>	<b>104</b>	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241526</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44850	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	0908_MW139_221114	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	0908_MW139_221114	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	0908_MW139_221114	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	0908_MW139_221114	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	0908_MW139_221114	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>						
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0 142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>						
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0 130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0 129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0 133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0 134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0 144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0 132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>				
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0 137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0 141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6 147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0 145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6 145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0 136





Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241526	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_221114,	0908_POT107_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_221114,	0908_POT107_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_221114,	0908_POT107_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_221114,	0908_POT107_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_221114,	0908_POT107_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<i>Analytical Methods</i>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241526  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44850  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241526-001	14-Nov-2022 12:57	0908_MW139_221114	✓
ES2241526-002	14-Nov-2022 13:03	0908_POT107_221114	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

1635

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A

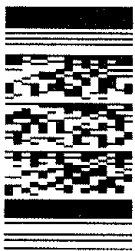
Random Sample Temperature on Receipt: °C

Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_MM139_221114		14/11/2022 12:57 PM	Water	ALS: 3 Non ALS: 0	No	X		
002	0908_POT107_221114		14/11/2022 01:03 PM	Water	ALS: 4 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241526**



Telephone : +61-2-9794 9555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_ofsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22

RELINQUISHED BY:

RECEIVED BY:  
 DATE TIME: 16/35

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMV139_221114	HDPE (no PTFE)	20 mL	00350821015606	Grey	No	
001	0908_MMV139_221114	HDPE (no PTFE)	20 mL	00350821015583	Grey	No	
001	0908_MMV139_221114	HDPE (no PTFE)	20 mL	00350821015533	Grey	No	
002	0908_POT107_221114	HDPE (no PTFE)	20 mL	00350821015754	Grey	No	
002	0908_POT107_221114	HDPE (no PTFE)	20 mL	00350821015747	Grey	No	
002	0908_POT107_221114	HDPE (no PTFE)	20 mL	00350821015755	Grey	No	
002	0908_POT107_221114	HDPE (no PTFE)	20 mL	00350821015723	Grey	No	

Total Bottle Count: ALS: 7, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241527</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44851</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>  <b>Telephone</b> : <b>+61 2 8784 8555</b> <b>Date Samples Received</b> : <b>16-Nov-2022 16:35</b> <b>Date Analysis Commenced</b> : <b>18-Nov-2022</b> <b>Issue Date</b> : <b>12-Dec-2022 15:05</b>
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_22111	0908_MW238S_22111	----	----	----
				4	4			
				14-Nov-2022 10:49	14-Nov-2022 10:42	----	----	----
Compound	CAS Number	LOR	Unit	ES2241527-001	ES2241527-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_22111	0908_MW238S_22111			
				4	4			
				14-Nov-2022 10:49	14-Nov-2022 10:42			
Compound	CAS Number	LOR	Unit	ES2241527-001	ES2241527-002			
				Result	Result			
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	94.7	102	----	----	----
13C8-PFOA	----	0.02	%	100	104	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241527</b>	Page	: 1 of 7
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44851	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

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This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>							
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4 144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0 130	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0 127	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0 131	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0 134	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0 140	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0 142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0 129	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0 129	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0 129	
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0 130	
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0 133	
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0 130	
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0 129	
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0 133	
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0 134	
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0 144	
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0 132	
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>					
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0 137	
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0 141	
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6 147	
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0 145	
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6 145	
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0 136	



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241527	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_221114,	0908_MW238S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_221114,	0908_MW238S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_221114,	0908_MW238S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_221114,	0908_MW238S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_221114,	0908_MW238S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241527  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44851  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241527-001	14-Nov-2022 10:49	0908_MW238D_221114	✓
ES2241527-002	14-Nov-2022 10:42	0908_MW238S_221114	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU09082022

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *de*  
DATE TIME: 16/11/22

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

RELINQUISHED BY:  
DATE TIME:

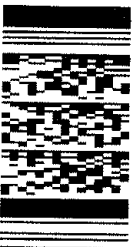
RECEIVED BY:  
DATE TIME:

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFA5 Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_MW238D_221114		14/11/2022 10:49 AM	Water	ALS: 4 Non ALS: 0	No	X		
002	0908_MW238S_221114		14/11/2022 10:42 AM	Water	ALS: 4 Non ALS: 0	No	X		

Telephone : + 61-2-8794 8555



Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241527**

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOM/AU0024

RELINQUISHED BY: [REDACTED]  
 DATE TIME: 16/11/22 1635  
 TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard Info:

RECEIVED BY: [REDACTED]  
 DATE TIME: 16/11/22 1635  
 RELINQUISHED BY: [REDACTED]  
 DATE TIME: [REDACTED]

RECEIVED BY: [REDACTED]  
 DATE TIME: [REDACTED]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW238D_221114	HDPE (no PTFE)	20 mL	00350621009023	Grey	No	
001	0908_MW238D_221114	HDPE (no PTFE)	20 mL	00352101040582	Grey	No	
001	0908_MW238D_221114	HDPE (no PTFE)	20 mL	00350621008875	Grey	No	
001	0908_MW238D_221114	HDPE (no PTFE)	20 mL	00352101040626	Grey	No	
002	0908_MW238S_221114	HDPE (no PTFE)	20 mL	00352101040273	Grey	No	
002	0908_MW238S_221114	HDPE (no PTFE)	20 mL	00352101040355	Grey	No	
002	0908_MW238S_221114	HDPE (no PTFE)	20 mL	00352101040445	Grey	No	
002	0908_MW238S_221114	HDPE (no PTFE)	20 mL	00352101040387	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / Frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241528</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44852</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>1</b> <b>No. of samples analysed</b> : <b>1</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 16-Nov-2022 16:35 <b>Date Analysis Commenced</b> : 18-Nov-2022 <b>Issue Date</b> : 12-Dec-2022 15:02
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: 'PFHxS' result confirmed by re-extraction and re-analysis.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_22111  
 4

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Sampling date / time

14-Nov-2022 12:21

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Compound	CAS Number	LOR	Unit
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ES2241528-001

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0908_MW230S_22111 4	----	----	----	----
Sampling date / time			14-Nov-2022 12:21	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2241528-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.2	----	----	----	----
13C8-PFOA	----	0.02	%	101	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241528</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44852	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>							
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4 144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0 130	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0 127	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0 131	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0 134	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0 140	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0 142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0 129	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0 129	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0 129	
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0 130	
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0 133	
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0 130	
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0 129	
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0 133	
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0 134	
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0 144	
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0 132	
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>					
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0 137	
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0 141	
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6 147	
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0 145	
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6 145	
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0 136	



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241528	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241528  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

C-O-C number : 44852  
Site : WLM\_offsite  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241528-001	14-Nov-2022 12:21	0908_MW230S_221114	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 16/11/22 1635

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMV230S_221114		14/11/2022 12:21 PM	Water	ALS: 4 Non ALS: 0	No	PFAS Waters - New Analysis WATER	X	

**ANALYSIS REQUIRED**

Environmental Division  
Sydney  
Work Order Reference  
**ES2241528**  
Telephone : + 61-2-8794 9556



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: *de*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME: 16/11/22 1635

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED]

SAMPLER MOBILE: [REDACTED]

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW230S_221114	HDPE (no PTFE)	20 mL	00350821015664	Grey	No	
001	0908_MW230S_221114	HDPE (no PTFE)	20 mL	00350821015670	Grey	No	
001	0908_MW230S_221114	HDPE (no PTFE)	20 mL	00350821015715	Grey	No	
001	0908_MW230S_221114	HDPE (no PTFE)	20 mL	00350821015717	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241529</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44853</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 16-Nov-2022 16:35 <b>Date Analysis Commenced</b> : 18-Nov-2022 <b>Issue Date</b> : 12-Dec-2022 13:22
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- Amendment (05/12/2022): This report has been amended to allow a change in sampling time for sample 001. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271D_22111	0908_MW271S_22111			
				4	4			
				14-Nov-2022 11:28	14-Nov-2022 11:24			
Compound	CAS Number	LOR	Unit	ES2241529-001	ES2241529-002			
				Result	Result			
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.12	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.03	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271D_22111	0908_MW271S_22111			
				4	4			
				14-Nov-2022 11:28	14-Nov-2022 11:24			
Compound	CAS Number	LOR	Unit	ES2241529-001	ES2241529-002			
				Result	Result			
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.17	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.02	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.14	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	101	104	----	----	----
13C8-PFOA	----	0.02	%	99.8	97.7	----	----	----





## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241529</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>2</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44853	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0	132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>					
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241529	Page	: 1 of 4
Amendment	: 2		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_221114,	0908_MW271S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_221114,	0908_MW271S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_221114,	0908_MW271S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_221114,	0908_MW271S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_221114,	0908_MW271S_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241529  
Amendment : 2

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44853  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN with a new sample receipt temperature.
- **(05/12/2022) This is an updated SRN which reflects a change in sampling time for sample 001.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241529-001	14-Nov-2022 11:28	0908_MW271D_221114	✓
ES2241529-002	14-Nov-2022 11:24	0908_MW271S_221114	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

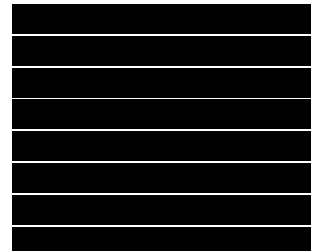
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU -AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22 1635

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)

Biohazard info:

Custody Seal Intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFA5 Waters - New Analysis	ALTERNATIVE ANALYSIS	
001	0908_MW271D_221114		14/11/2022 11:37 AM	Water	ALS: 4 Non ALS: 0	No	X		
002	0908_MW271S_221114		14/11/2022 11:24 AM	Water	ALS: 4 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241529**  
 Telephone: +61-2-8784 9565





CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *RS*  
 DATE TIME: 16/11/22

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

1635

LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Yes No N/A

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

C

Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MM271D_221114	HDPE (no PTFE)	20 mL	00352101040396	Grey	No	
001	0908_MM271D_221114	HDPE (no PTFE)	20 mL	00352101040319	Grey	No	
001	0908_MM271D_221114	HDPE (no PTFE)	20 mL	00352101040730	Grey	No	
001	0908_MM271D_221114	HDPE (no PTFE)	20 mL	00352101040262	Grey	No	
002	0908_MM271S_221114	HDPE (no PTFE)	20 mL	00350821015674	Grey	No	
002	0908_MM271S_221114	HDPE (no PTFE)	20 mL	00350821015641	Grey	No	
002	0908_MM271S_221114	HDPE (no PTFE)	20 mL	00350821015692	Grey	No	
002	0908_MM271S_221114	HDPE (no PTFE)	20 mL	00350821015736	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241530</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44854</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>  <b>Telephone</b> : <b>+61 2 8784 8555</b> <b>Date Samples Received</b> : <b>16-Nov-2022 16:35</b> <b>Date Analysis Commenced</b> : <b>18-Nov-2022</b> <b>Issue Date</b> : <b>12-Dec-2022 13:33</b>
--	--



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD019_221114	----	----	----	----
		Sampling date / time		14-Nov-2022 13:44	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2241530-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	57.6	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0028	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0003	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0283	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0004	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0013	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0003	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0008	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0908_SD019_221114	----	----	----	----
Sampling date / time			14-Nov-2022 13:44	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2241530-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	<b>0.0342</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0311</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0339</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	<b>97.0</b>	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>96.0</b>	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW019_221114	----	----	----	----
Sampling date / time				14-Nov-2022 13:45	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2241530-002	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	----	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	----	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.33	----	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	----	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.74	----	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.06	----	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	----	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW019_221114	----	----	----	----
		Sampling date / time	14-Nov-2022 13:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2241530-002	-----	-----	-----
				Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>							
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>							
Sum of PFAS	----	0.01	µg/L	1.22	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.07	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.18	----	----	----
<b>EP231S: PFAS Surrogate</b>							
13C4-PFOS	----	0.02	%	103	----	----	----
13C8-PFOA	----	0.02	%	103	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241530</b>	<b>Page</b>	: 1 of 11
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44854	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4712303)</b>									
EP2215285-002	Anonymous	EA055: Moisture Content	----	0.1	%	21.6	21.5	0.0	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0005	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003)</b>									



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.6	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	91.6	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	105	65.0	137	





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003) - continued</b>									
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	110	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>									
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	97.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	116	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	106	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	115	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	106	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	97.2	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	118	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	114	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	111	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	127	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>					
ES2241524-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	115	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	127	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	120	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	120	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	121	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003) - continued</b>							
ES2241524-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	121	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	107	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	116	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	114	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	88.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0	145



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241530	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Moisture Content	1	12	8.33	10.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD019_221114	14-Nov-2022	----	----	----	18-Nov-2022	28-Nov-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_221114	14-Nov-2022	18-Nov-2022	13-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_221114	14-Nov-2022	18-Nov-2022	13-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD019_221114	14-Nov-2022	18-Nov-2022	13-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_221114	14-Nov-2022	18-Nov-2022	13-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD019_221114	14-Nov-2022	18-Nov-2022	13-May-2023	✓	21-Nov-2022	28-Dec-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_221114	14-Nov-2022	21-Nov-2022	13-May-2023	✔	21-Nov-2022	13-May-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	12	8.33	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241530  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44854  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2241530-001	14-Nov-2022 13:44	0908_SD019_221114	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241530-002	14-Nov-2022 13:45	0908_SW019_221114	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

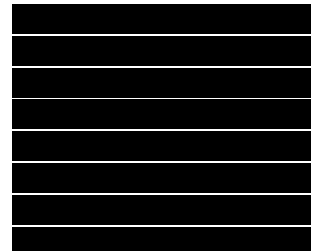
- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASCOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOM/AU0024

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22 1635

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:			°C
Other comments:			

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SDP019_221114		14/11/2022 01:44 PM	Soil	ALS: 1 Non ALS: 0	No	PFAS Soil - New Analysis SOIL		
002	0908_SW019_221114		14/11/2022 01:45 PM	Water	ALS: 4 Non ALS: 0	No	PFAS Waters - New Analysis WATER	X	

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241530**



Telephone : + 61-2-8784 8555

CLIENT: AECOMAU -AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22

RELINQUISHED BY:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOM/AU0024

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SDO19_221114	HDPE Soil Jar	200 mL	006203322104463	Grey	No	
002	0908_SW019_221114	HDPE (no PTFE)	20 mL	00350821015539	Grey	No	
002	0908_SW019_221114	HDPE (no PTFE)	20 mL	00350821015518	Grey	No	
002	0908_SW019_221114	HDPE (no PTFE)	20 mL	00350821015753	Grey	No	
002	0908_SW019_221114	HDPE (no PTFE)	20 mL	00350821015761	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241531</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44855</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 16-Nov-2022 16:35 <b>Date Analysis Commenced</b> : 18-Nov-2022 <b>Issue Date</b> : 12-Dec-2022 15:02
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW231D_22111	0908_MW231S_22111	0908_POT382_22111	----	----
					4	4	4		
				Sampling date / time	14-Nov-2022 17:06	14-Nov-2022 17:15	14-Nov-2022 16:36	----	----
Compound	CAS Number	LOR	Unit	ES2241531-001	ES2241531-002	ES2241531-003	-----	-----	-----
				Result	Result	Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_22111	0908_MW231S_22111	0908_POT382_22111	----	----
				4	4	4		
Sampling date / time				14-Nov-2022 17:06	14-Nov-2022 17:15	14-Nov-2022 16:36	----	----
Compound	CAS Number	LOR	Unit	ES2241531-001	ES2241531-002	ES2241531-003	-----	-----
				Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.3	101	106	----	----
13C8-PFOA	----	0.02	%	99.4	104	101	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241531</b>	<b>Page</b>	: 1 of 7
<b>Amendment</b>	: <b>2</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44855	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 3		
<b>No. of samples analysed</b>	: 3		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0	132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>					
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136





Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241531	Page	: 1 of 4
Amendment	: 2		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 3
Order number	: 60612562_2.1	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_221114, 0908_POT382_221114	0908_MW231S_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_221114, 0908_POT382_221114	0908_MW231S_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_221114, 0908_POT382_221114	0908_MW231S_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_221114, 0908_POT382_221114	0908_MW231S_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_221114, 0908_POT382_221114	0908_MW231S_221114,	14-Nov-2022	21-Nov-2022	13-May-2023	✓	21-Nov-2022	13-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241531  
Amendment : 2

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44855  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241531-001	14-Nov-2022 17:06	0908_MW231D_221114	✓
ES2241531-002	14-Nov-2022 17:15	0908_MW231S_221114	✓
ES2241531-003	14-Nov-2022 16:36	0908_POT382_221114	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



### Requested Deliverables

#### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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Email  
Email



#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0002

SAMPLER MOBILE: [REDACTED]

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:  
*de*  
 16/11/22 1535

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW231D_221114		14/11/2022 05:06 PM	Water	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
002	0908_MW231S_221114		14/11/2022 05:15 PM	Water	ALS: 4 Non ALS: 0	No	X	
003	0908_PO1382_221114		14/11/2022 04:36 PM	Water	ALS: 4 Non ALS: 0	No	X	

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241531**  
 Telephone: + 61-2-9794 8555



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW231D_221114	HDPE (no PTFE)	20 mL	00352101040781	Grey	No	
001	0908_MW231D_221114	HDPE (no PTFE)	20 mL	00352101040437	Grey	No	
001	0908_MW231D_221114	HDPE (no PTFE)	20 mL	00352101040569	Grey	No	
001	0908_MW231D_221114	HDPE (no PTFE)	20 mL	00352101040331	Grey	No	
002	0908_MW231S_221114	HDPE (no PTFE)	20 mL	00352101040435	Grey	No	
002	0908_MW231S_221114	HDPE (no PTFE)	20 mL	00352101040482	Grey	No	
002	0908_MW231S_221114	HDPE (no PTFE)	20 mL	00352101040543	Grey	No	
002	0908_MW231S_221114	HDPE (no PTFE)	20 mL	00352101040314	Grey	No	
003	0908_POT382_221114	HDPE (no PTFE)	20 mL	00350821015668	Grey	No	
003	0908_POT382_221114	HDPE (no PTFE)	20 mL	00350821015626	Grey	No	
003	0908_POT382_221114	HDPE (no PTFE)	20 mL	00350821015665	Grey	No	
003	0908_POT382_221114	HDPE (no PTFE)	20 mL	00350821015545	Grey	No	

Total Bottle Count: ALS: 12, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241532</b> <b>Amendment</b> : <b>1</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44856</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>5</b> <b>No. of samples analysed</b> : <b>5</b>	<b>Page</b> : 1 of 7  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>  <b>Telephone</b> : <b>+61 2 8784 8555</b> <b>Date Samples Received</b> : <b>16-Nov-2022 16:35</b> <b>Date Analysis Commenced</b> : <b>18-Nov-2022</b> <b>Issue Date</b> : <b>12-Dec-2022 14:56</b>
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Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD259_221115	0908_SD254_221115	0908_SD255_221115	0908_SD326_221115	----
		Sampling date / time		15-Nov-2022 08:20	15-Nov-2022 08:43	15-Nov-2022 08:38	15-Nov-2022 08:33	----
Compound	CAS Number	LOR	Unit	ES2241532-001	ES2241532-002	ES2241532-003	ES2241532-004	-----
				Result	Result	Result	Result	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	32.7	56.2	51.1	28.1	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0023	0.0007	0.0005	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.0003	0.0002	<0.0002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0042	0.0378	0.0288	0.0093	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012	<0.0002	<0.0002	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0002	<0.0002	<0.0002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0005	<0.0002	<0.0002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0002	<0.0002	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD259_221115	0908_SD254_221115	0908_SD255_221115	0908_SD326_221115	----
Sampling date / time				15-Nov-2022 08:20	15-Nov-2022 08:43	15-Nov-2022 08:38	15-Nov-2022 08:33	----	----
Compound	CAS Number	LOR	Unit	ES2241532-001	ES2241532-002	ES2241532-003	ES2241532-004	-----	----
				Result	Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	0.0047	0.0423	0.0299	0.0098	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	0.0047	0.0401	0.0295	0.0098	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	0.0047	0.0408	0.0295	0.0098	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	88.5	108	109	106	----	----
13C8-PFOA	----	0.0002	%	96.5	93.0	92.0	92.0	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW259\_221115

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				Sampling date / time	15-Nov-2022 08:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2241532-005	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.78	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.20	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.17	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW259\_221115

Compound	CAS Number	LOR	Unit	Sampling date / time				
				15-Nov-2022 08:20	----	----	----	----
				ES2241532-005	-----	-----	-----	-----
				Result	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	2.47	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.98	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.34	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	101	----	----	----	----
13C8-PFOA	----	0.02	%	105	----	----	----	----





### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241532</b>	<b>Page</b>	: 1 of 11
<b>Amendment</b>	: <b>1</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44856	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 5		
<b>No. of samples analysed</b>	: 5		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4712303)</b>									
EP2215285-002	Anonymous	EA055: Moisture Content	----	0.1	%	21.6	21.5	0.0	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0006	0.0005	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4712003)</b>									
ES2241524-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003)</b>									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4712003) - continued</b>									
ES2241524-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2241748-023	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	107	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.4	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	91.6	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	105	65.0	137





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	110	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>									
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	97.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	116	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	106	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	115	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	106	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	97.2	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	105	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	118	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	114	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	111	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	127	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003)</b>					
ES2241524-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	115	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	127	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	120	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	120	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	121	65.1	134



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4712003) - continued</b>							
ES2241524-003	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	121	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4712003)</b>							
ES2241524-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	107	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	116	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	114	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	88.0	69.2	143
Sub-Matrix: WATER				Matrix Spike (MS) Report			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241532	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 5
Order number	: 60612562_2.1	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
<b>Laboratory Duplicates (DUP)</b>					
Moisture Content	1	12	8.33	10.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
HDPE Soil Jar (EA055) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	----	----	----	18-Nov-2022	29-Nov-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD259_221115, 0908_SD255_221115,	0908_SD254_221115, 0908_SD326_221115	15-Nov-2022	18-Nov-2022	14-May-2023	✓	21-Nov-2022	28-Dec-2022	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✓	21-Nov-2022	14-May-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	1	12	8.33	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241532  
Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44856  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Pickup  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9c - Ice present  
No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2241532-001	15-Nov-2022 08:20	0908_SD259_221115	✓	✓
ES2241532-002	15-Nov-2022 08:43	0908_SD254_221115	✓	✓
ES2241532-003	15-Nov-2022 08:38	0908_SD255_221115	✓	✓
ES2241532-004	15-Nov-2022 08:33	0908_SD326_221115	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241532-005	15-Nov-2022 08:20	0908_SW259_221115	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP

SITE: WLM\_ofsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 16/11/22 15:35	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days	LABORATORY USE ONLY (Circle)
Biohazard Info:	Custody Seal Intact? Yes No N/A
	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	Random Sample Temperature on Receipt: C
	Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SD259_221115		15/11/2022 08:20 AM	Soil	ALS: 1 Non ALS: 0	No	X			
002	0908_SD254_221115		15/11/2022 08:43 AM	Soil	ALS: 1 Non ALS: 0	No	X			
003	0908_SD255_221115		15/11/2022 08:38 AM	Soil	ALS: 1 Non ALS: 0	No	X			
004	0908_SD326_221115		15/11/2022 08:33 AM	Soil	ALS: 1 Non ALS: 0	No	X			
005	0908_SW259_221115		15/11/2022 08:20 AM	Water	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241532**  
 Telephone : + 61-2-9794 8655



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ESS2021AECOMAU0024

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22 15:35

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SD256_221115	HDPE Soil Jar	200 mL	00620322104548	Grey	No	
002	0908_SD254_221115	HDPE Soil Jar	200 mL	00620322023667	Grey	No	
003	0908_SD255_221115	HDPE Soil Jar	200 mL	00620322023737	Grey	No	
004	0908_SD326_221115	HDPE Soil Jar	200 mL	00620322023763	Grey	No	
005	0908_SW259_221115	HDPE (no PTFE)	20 mL	00350821015509	Grey	No	
005	0908_SW259_221115	HDPE (no PTFE)	20 mL	00350821015567	Grey	No	
005	0908_SW259_221115	HDPE (no PTFE)	20 mL	00350821015571	Grey	No	
005	0908_SW259_221115	HDPE (no PTFE)	20 mL	00350821015726	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES2241534</b> <b>Amendment</b> : <b>2</b> <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>LEVEL 21 420 GEORGE STREET</b> <b>SYDNEY NSW, AUSTRALIA 2000</b>  <b>Telephone</b> : <b>----</b> <b>Project</b> : <b>NSW_0908_PFASOMP</b> <b>Order number</b> : <b>60612562_2.1</b> <b>C-O-C number</b> : <b>44857</b> <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : <b>WLM_offsite</b> <b>Quote number</b> : <b>SY/139/19 v4 60612562_2.1</b> <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>	<b>Page</b> : 1 of 5  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : <b>277-289 Woodpark Road Smithfield NSW Australia 2164</b>  <b>Telephone</b> : <b>+61 2 8784 8555</b> <b>Date Samples Received</b> : <b>16-Nov-2022 16:35</b> <b>Date Analysis Commenced</b> : <b>18-Nov-2022</b> <b>Issue Date</b> : <b>12-Dec-2022 13:28</b>
--	--



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (05/12/2022): This report has been amended to allow a change in ID for samples 001 and 002. All analysis results are as per the previous report.
- Amendment (12/12/2022): This report has been amended and re-released to update the receipt temperature of samples on the SRN.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236D_22111	0908_MW236S_22111	----	----	----
				5	5	----	----	----
				15-Nov-2022 09:34	15-Nov-2022 09:32	----	----	----
Compound	CAS Number	LOR	Unit	ES2241534-001	ES2241534-002	-----	-----	-----
				Result	Result	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236D_22111	0908_MW236S_22111			
				5	5			
				15-Nov-2022 09:34	15-Nov-2022 09:32			
Compound	CAS Number	LOR	Unit	ES2241534-001	ES2241534-002			
				Result	Result			
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	102	100	----	----	----
13C8-PFOA	----	0.02	%	101	103	----	----	----



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES2241534</b>	Page	: 1 of 7
<b>Amendment</b>	: <b>2</b>		
<b>Client</b>	: <b>AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: [REDACTED]	<b>Contact</b>	: [REDACTED]
<b>Address</b>	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>Telephone</b>	: ----	<b>Telephone</b>	: +61 2 8784 8555
<b>Project</b>	: NSW_0908_PFASOMP	<b>Date Samples Received</b>	: 16-Nov-2022
<b>Order number</b>	: 60612562_2.1	<b>Date Analysis Commenced</b>	: 18-Nov-2022
<b>C-O-C number</b>	: 44857	<b>Issue Date</b>	: 12-Dec-2022
<b>Sampler</b>	: [REDACTED]		
<b>Site</b>	: WLM_offsite		
<b>Quote number</b>	: SY/139/19 v4 60612562_2.1		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4710409) - continued</b>									
ES2241526-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4710409) - continued</b>									
EP2215010-027	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2241526-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4710409)</b>									
EP2215010-027	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2241526-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	118	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	102	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	111	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	117	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	109	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	110	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	111	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	111	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	100	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report		
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409) - continued</b>							
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4 144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4710409)</b>						
EP2215010-027	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	94.4	72.0 130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	106	71.0 127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	100	68.0 131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0 134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	95.6	65.0 140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	113	53.0 142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4710409)</b>						
EP2215010-027	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0 129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	119	72.0 129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	118	72.0 129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	116	72.0 130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	118	71.0 133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	126	69.0 130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	105	71.0 129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	126	69.0 133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	128	72.0 134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	123	65.0 144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	114	71.0 132
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409)</b>				
EP2215010-027	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.6	67.0 137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	68.0 141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	106	62.6 147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	121	66.0 145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	115	57.6 145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	120	65.0 136



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4710409) - continued</b>							
EP2215010-027	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4710409)</b>							
EP2215010-027	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	105	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2241534	Page	: 1 of 4
Amendment	: 2		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 16-Nov-2022
Site	: WLM_offsite	Issue Date	: 12-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_221115,	0908_MW236S_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✔	21-Nov-2022	14-May-2023	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_221115,	0908_MW236S_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✔	21-Nov-2022	14-May-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_221115,	0908_MW236S_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✔	21-Nov-2022	14-May-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_221115,	0908_MW236S_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✔	21-Nov-2022	14-May-2023	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_221115,	0908_MW236S_221115	15-Nov-2022	21-Nov-2022	14-May-2023	✔	21-Nov-2022	14-May-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2241534  
Amendment : 2

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 44857  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 16-Nov-2022 16:35  
Client Requested Due : 23-Nov-2022  
Date

Issue Date : 12-Dec-2022  
Scheduled Reporting Date : 23-Nov-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 2.9°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **(05/12/2022) This is an updated SRN which reflects a change in ID for samples 001 and 002.**
- **This is an updated SRN with a new sample receipt temperature.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2241534-001	15-Nov-2022 09:34	0908_MW236D_221115	✓
ES2241534-002	15-Nov-2022 09:32	0908_MW236S_221115	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 16/11/22 16:35

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

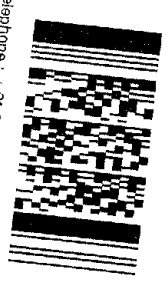
Custody Seal intact? Yes No N/A  
 Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_MW236D_221114		15/11/2022 09:34 AM	Water	ALS: 3 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
002	0908_MW236S_221114		15/11/2022 09:32 AM	Water	ALS: 4 Non ALS: 0	No	X	

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2241534**



Telephone : + 61-2-8794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: *AE*

RELINQUISHED DATE TIME:

RECEIVED DATE TIME:

DATE TIME: 16/11/22 16:35

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES202/AECOMAU002 4

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MM236D_221114	HDPE (no PTFE)	20 mL	00350821015120	Grey	No	
001	0908_MM236D_221114	HDPE (no PTFE)	20 mL	00350821015796	Grey	No	
001	0908_MM236D_221114	HDPE (no PTFE)	20 mL	00350821015749	Grey	No	
002	0908_MM236S_221114	HDPE (no PTFE)	20 mL	00350821015131	Grey	No	
002	0908_MM236S_221114	HDPE (no PTFE)	20 mL	00350821015140	Grey	No	
002	0908_MM236S_221114	HDPE (no PTFE)	20 mL	00350821015057	Grey	No	
002	0908_MM236S_221114	HDPE (no PTFE)	20 mL	00350821015053	Grey	No	

Total Bottle Count: ALS: 7, Non ALS: 0

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2242731**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
  
**Telephone** : ----  
**Project** : NSW\_0908\_PFASOMP  
**Order number** : 60612562\_2.1  
**C-O-C number** : 45384  
**Sampler** : [REDACTED] [REDACTED]  
**Site** : WLM\_offsite  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 25-Nov-2022 12:27  
**Date Analysis Commenced** : 28-Nov-2022  
**Issue Date** : 01-Dec-2022 09:29



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD600_221125	----	----	----	----
		Sampling date / time		25-Nov-2022 11:36	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2242731-002	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	57.3	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0014	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0164	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0003	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD600_221125	----	----	----	----
Sampling date / time				25-Nov-2022 11:36	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2242731-002	-----	-----	-----	-----	
				Result	----	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0181</b>	----	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0178</b>	----	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0181</b>	----	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>100</b>	----	----	----	----	
13C8-PFOA	----	0.0002	%	<b>108</b>	----	----	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW600_221125	----	----	----	----
		Sampling date / time		25-Nov-2022 11:36	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2242731-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.69	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.42	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----





## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

0908\_SW600\_221125

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			Sampling date / time	25-Nov-2022 11:36	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2242731-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	2.65	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	2.11	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	2.53	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	100	----	----	----	----
13C8-PFOA	----	0.02	%	94.8	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

## QUALITY CONTROL REPORT

<b>Work Order</b> : <b>ES2242731</b>  <b>Client</b> : <b>AECOM AUSTRALIA PTY LTD</b> <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000  <b>Telephone</b> : ---- <b>Project</b> : NSW_0908_PFASOMP <b>Order number</b> : 60612562_2.1 <b>C-O-C number</b> : 45384 <b>Sampler</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <span style="background-color: black; color: black;">[REDACTED]</span> <b>Site</b> : WLM_offsite <b>Quote number</b> : SY/139/19 v4 60612562_2.1 <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2	<b>Page</b> : 1 of 11  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : <span style="background-color: black; color: black;">[REDACTED]</span> <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>Telephone</b> : +61 2 8784 8555 <b>Date Samples Received</b> : 25-Nov-2022 <b>Date Analysis Commenced</b> : 28-Nov-2022 <b>Issue Date</b> : 01-Dec-2022
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Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
<span style="background-color: black; color: black;">[REDACTED]</span>	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4735001)</b>									
ES2242727-004	Anonymous	EA055: Moisture Content	----	0.1	%	22.0	22.6	2.7	0% - 20%
ES2242903-002	Anonymous	EA055: Moisture Content	----	0.1	%	67.9	67.7	0.3	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4733675)</b>									
ES2242699-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2242758-010	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4733675)</b>									
ES2242699-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4733675) - continued</b>									
ES2242699-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2242758-010	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4733675)</b>									
ES2242699-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2242758-010	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4733675)</b>									
ES2242699-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2242758-010	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4728362)</b>									
ES2242732-006	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2242731-001	0908_SW600_221125	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.69	0.78	12.4	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.42	1.44	1.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	0.08	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	0.04	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4728362)</b>									
ES2242732-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4728362) - continued</b>									
ES2242732-006	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2242731-001	0908_SW600_221125	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	0.20	5.8	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4728362)</b>									
ES2242732-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2242731-001	0908_SW600_221125	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4728362)</b>									
ES2242732-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2242731-001	0908_SW600_221125	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 4728362)</b>									
ES2242732-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2242731-001	0908_SW600_221125	EP231X: Sum of PFAS	----	0.01	µg/L	2.65	2.79	5.1	0% - 20%





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4733675)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.2	72.0	128	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	73.0	123	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	70.8	67.0	130	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	70.0	132	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.8	68.0	136	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	72.0	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4733675)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	83.8	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.0	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.6	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.2	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.8	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.0	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.8	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4733675)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	83.0	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.8	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.8	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.4	65.1	134	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	63.0	144	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	75.6	61.0	139	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4733675)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.8	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	72.0	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	74.4	65.0	137	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4733675) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	76.0	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4728362)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	84.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	85.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4728362)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	83.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	73.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	81.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	80.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	134
EP231X: Perfluorotridecanoic acid (PFTriDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4728362)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	82.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.1	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	83.2	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4728362)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	88.0	64.0	140



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4728362) - continued</b>									
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.8	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4733675)</b>							
ES2242699-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	92.8	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	84.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	78.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	92.4	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	84.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.0	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4733675)</b>							
ES2242699-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	78.1	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	89.2	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	100	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	89.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	96.8	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	102	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	95.6	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	123	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	106	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	108	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	106	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4733675)</b>					
ES2242699-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	95.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.2	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	104	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	102	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4733675) - continued</b>							
ES2242699-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	98.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	96.4	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4733675)</b>							
ES2242699-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	85.2	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	76.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	84.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	82.4	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4728362)</b>							
ES2242729-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	74.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	89.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	75.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	80.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4728362)</b>							
ES2242729-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	97.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	91.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	88.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	93.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	101	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	94.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	111	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	85.8	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4728362)</b>							
ES2242729-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	95.8	66.0	145



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4728362) - continued</b>							
ES2242729-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	84.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4728362)</b>							
ES2242729-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	93.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	110	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	111	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	81.0	71.4	144

## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2242731	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP	Date Samples Received	: 25-Nov-2022
Site	: WLM_offsite	Issue Date	: 01-Dec-2022
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
<b>HDPE Soil Jar (EA055)</b> 0908_SD600_221125	25-Nov-2022	----	----	----	29-Nov-2022	09-Dec-2022	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD600_221125	25-Nov-2022	29-Nov-2022	24-May-2023	✓	29-Nov-2022	08-Jan-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD600_221125	25-Nov-2022	29-Nov-2022	24-May-2023	✓	29-Nov-2022	08-Jan-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD600_221125	25-Nov-2022	29-Nov-2022	24-May-2023	✓	29-Nov-2022	08-Jan-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD600_221125	25-Nov-2022	29-Nov-2022	24-May-2023	✓	29-Nov-2022	08-Jan-2023	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE Soil Jar (EP231X)</b> 0908_SD600_221125	25-Nov-2022	29-Nov-2022	24-May-2023	✓	29-Nov-2022	08-Jan-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW600_221125	25-Nov-2022	28-Nov-2022	24-May-2023	✓	29-Nov-2022	24-May-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW600_221125	25-Nov-2022	28-Nov-2022	24-May-2023	✓	29-Nov-2022	24-May-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW600_221125	25-Nov-2022	28-Nov-2022	24-May-2023	✓	29-Nov-2022	24-May-2023	✓



Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW600_221125	25-Nov-2022	28-Nov-2022	24-May-2023	✓	29-Nov-2022	24-May-2023	✓
<b>EP231P: PFAS Sums</b>							
<b>HDPE (no PTFE) (EP231X)</b> 0908_SW600_221125	25-Nov-2022	28-Nov-2022	24-May-2023	✓	29-Nov-2022	24-May-2023	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2242731

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP  
Order number : 60612562\_2.1

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 45384  
Site : WLM\_offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 25-Nov-2022 12:27  
Client Requested Due : 02-Dec-2022  
Date

Issue Date : 25-Nov-2022  
Scheduled Reporting Date : 02-Dec-2022

Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 4.6°C - Ice present  
No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2242731-002	25-Nov-2022 11:36	0908_SD600_221125	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2242731-001	25-Nov-2022 11:36	0908_SW600_221125	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email  
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**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

[derp.labreports@esdat.com.au](mailto:derp.labreports@esdat.com.au)



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:


EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: <i>25/11/22 14:00</i>	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days	LABORATORY USE ONLY (Circle)
Biohazard info:	Custody Seal intact? Yes No N/A
	Free ice / frozen ice bricks present upon receipt? Yes No N/A
	Random Sample Temperature on Receipt: °C
	Other comments:

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED			ADDITIONAL INFORMATION
							PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	
001	0908_SW600_221125		25/11/2022 11:36 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0908_SD600_221125		25/11/2022 11:36 AM	SOIL	ALS: 1 Non ALS: 0	No	X			

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2242731**  
 Telephone : + 61-2-8784 8655



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: W/LM\_ofsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 25/11/22 1446

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]

QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040274	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040343	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040407	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040391	Grey	No	
002	0908_SD600_221125	HDPE Soil Jar	200 mL	00621019053907	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0



**Custody Document for Submissions via ALS Compass App**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2242731**



Telephone : + 61-2-8784 8655

Project: 60612562

Client: AECOM

Project Manager:

Phone:

ALS Compass COC Reference: 45384

# Samples: 2

Sampler:

Phone:

Turnaround Requirements: Standard \_\_\_\_\_ Urgent \_\_\_\_\_

Special Instructions:

ALS Use Only  
 Custody seal intact? YES NO N/A  
~~Free ice~~ / Frozen ice bricks upon receipt? YES NO N/A  
 Random sample temperature on receipt? 4.6 °C

Relinquished by:	Received by:	Relinquished by:	Received by:
Relinquished by: Date / Time: <u>25/11/22 12:27</u>	Received by: Date / Time: <u>25/11/22 12:27</u>	Relinquished by: Date / Time: <u>25/11/22 17:00</u>	Received by: Date / Time: <u>25.11.22 7:30pm</u>





CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
			<i>A. Ky</i> 25.11.22 7:30pm

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			ADDITIONAL INFORMATION		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SW600_221125		25/11/2022 11:36 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0908_SD600_221125		25/11/2022 11:36 AM	SOIL	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP

SITE: WLM\_offsite

ORDER NO: 60612562\_2.1

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME: 25.11.22 7:30pm

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?

Free ice / frozen ice bricks present upon receipt?

Random Sample Temperature on Receipt:

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

Yes No N/A  
 Yes No N/A  
 C

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040274	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040343	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040407	Grey	No	
001	0908_SW600_221125	HDPE (no PTFE)	20 mL	00352101040391	Grey	No	
002	0908_SD600_221125	HDPE Soil Jar	200 mL	00621019053907	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0

## CERTIFICATE OF ANALYSIS 310531

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<b><u>60612562_2.1, NSW_0908_PFASOMP</u></b>
<b>Number of Samples</b>	12 Water, 4 Soil
<b>Date samples received</b>	14/11/2022
<b>Date completed instructions received</b>	14/11/2022

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

<b>Date results requested by</b>	22/11/2022
<b>Date of Issue</b>	22/11/2022
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### Results Approved By

[REDACTED] Senior Chemist  
 [REDACTED] Laboratory Manager, Sydney  
 [REDACTED] Organics Development Manager, Sydney

#### Authorised By

[REDACTED]  
 [REDACTED] Laboratory Manager

PFAS in Soils Extended					
Our Reference		310531-2	310531-3	310531-10	310531-16
Your Reference	UNITS	0908_QC202_22 1107	0908_QC204_22 1107	0908_QC207_22 1108	0908_QC211_22 1109
Date Sampled		7/11/2022	7/11/2022	08/11/2022	09/11/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	17/11/2022	17/11/2022	17/11/2022	17/11/2022
Date analysed	-	18/11/2022	18/11/2022	18/11/2022	17/11/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	0.2
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	0.3
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.2	0.4	0.5	2.5
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	0.3
Perfluorooctanesulfonic acid PFOS	µg/kg	2.2	9.6	5.9	12
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	0.3	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	0.7
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	0.3
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	101	108	98	100
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	101	104	100	97
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	75	68	84	92
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	84	79	91	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	75	62	85	92

PFAS in Soils Extended					
Our Reference		310531-2	310531-3	310531-10	310531-16
Your Reference	UNITS	0908_QC202_22 1107	0908_QC204_22 1107	0908_QC207_22 1108	0908_QC211_22 1109
Date Sampled		7/11/2022	7/11/2022	08/11/2022	09/11/2022
Type of sample		Soil	Soil	Soil	Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	76	69	93	94
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	79	67	86	88
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	84	73	94	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	87	83	97	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	80	74	94	95
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	60	60	82	98
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	45	55	77	89
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	45	30	73	85
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	50	42	80	89
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	62	51	89	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	106	89	104	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	140	90	120	116
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	91	75	96	98
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	40	42	66	82
Extracted ISTD d <sub>3</sub> N MeFOSA	%	33	32	68	85
Extracted ISTD d <sub>5</sub> N EtFOSA	%	36	33	67	90
Extracted ISTD d <sub>7</sub> N MeFOSE	%	40	45	81	84
Extracted ISTD d <sub>9</sub> N EtFOSE	%	36	42	63	86
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	44	51	66	99
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	47	36	74	76
Total Positive PFHxS & PFOS	µg/kg	2.4	10	6.4	14
Total Positive PFOS & PFOA	µg/kg	2.2	9.6	5.9	12
Total Positive PFAS	µg/kg	2.4	10	6.7	16

Moisture					
Our Reference		310531-2	310531-3	310531-10	310531-16
Your Reference	UNITS	0908_QC202_22 1107	0908_QC204_22 1107	0908_QC207_22 1108	0908_QC211_22 1109
Date Sampled		7/11/2022	7/11/2022	08/11/2022	09/11/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	15/11/2022	15/11/2022	15/11/2022	16/11/2022
Date analysed	-	16/11/2022	16/11/2022	16/11/2022	17/11/2022
Moisture	%	21	18	6.4	32

PFAS in Waters Extended						
Our Reference		310531-1	310531-4	310531-5	310531-6	310531-7
Your Reference	UNITS	0908_QC200_22 1107	0908_QC206_22 1107	0908_QC208_22 1108	0908_QC210_22 1108	0908_QC212_22 1109
Date Sampled		7/11/2022	7/11/2022	08/11/2022	08/11/2022	09/11/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
Date analysed	-	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.09	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.17	0.02	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.02	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid ethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid ethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103	95	98	96	99
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	101	101	101	99	101
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	99	98	96	103	98
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	104	108	106	103	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	104	108	104	105	105

PFAS in Waters Extended						
Our Reference		310531-1	310531-4	310531-5	310531-6	310531-7
Your Reference	UNITS	0908_QC200_22 1107	0908_QC206_22 1107	0908_QC208_22 1108	0908_QC210_22 1108	0908_QC212_22 1109
Date Sampled		7/11/2022	7/11/2022	08/11/2022	08/11/2022	09/11/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	92	84	87	106	90
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	102	101	88	106	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	106	111	100	107	111
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	109	115	105	111	113
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	110	111	104	110	110
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	109	113	101	108	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	114	111	101	114	114
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	108	108	100	107	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	112	111	105	107	114
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	94	97	93	96	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	116	123	76	118	127
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	122	126	85	120	123
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	122	120	82	115	122
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	112	113	113	111	114
Extracted ISTD d <sub>3</sub> N MeFOSA	%	107	108	109	104	107
Extracted ISTD d <sub>5</sub> N EtFOSA	%	100	99	101	96	100
Extracted ISTD d <sub>7</sub> N MeFOSE	%	121	116	116	117	119
Extracted ISTD d <sub>9</sub> N EtFOSE	%	103	106	104	106	105
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	114	119	87	114	118
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	119	117	87	113	118
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.27	0.02	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	0.17	0.02	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.29	0.02	<0.01



PFAS in Waters Extended						
Our Reference		310531-8	310531-9	310531-11	310531-12	310531-13
Your Reference	UNITS	0908_QC214_22 1110	0908_QC205_22 1110	0908_QC209_22 1109	0908_QC213_22 1109	0908_QC201_22 1110
Date Sampled		10/11/2022	10/11/2022	09/11/2022	09/11/2022	10/11/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022
Date analysed	-	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022
Perfluorobutanesulfonic acid	µg/L	0.09	0.03	0.60	0.02	<0.01
Perfluoropentanesulfonic acid	µg/L	0.07	0.04	0.72	0.03	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.98	0.42	6.0	0.16	0.07
Perfluoroheptanesulfonic acid	µg/L	0.09	<0.01	0.62	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	4.2	0.02	16	0.06	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	0.21	<0.02	<0.02
Perfluoropentanoic acid	µg/L	0.05	0.02	0.34	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.18	0.06	1.7	0.05	<0.01
Perfluoroheptanoic acid	µg/L	0.04	<0.01	0.25	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.08	<0.01	0.57	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	99	102	102	97	102
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	98	99	100	99	102
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	100	103	100	105	103
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	102	103	101	104	105
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	104	105	88	107	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	98	103	80	112	102

PFAS in Waters Extended						
Our Reference		310531-8	310531-9	310531-11	310531-12	310531-13
Your Reference	UNITS	0908_QC214_22 1110	0908_QC205_22 1110	0908_QC209_22 1109	0908_QC213_22 1109	0908_QC201_22 1110
Date Sampled		10/11/2022	10/11/2022	09/11/2022	09/11/2022	10/11/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	107	108	103	112	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	109	111	110	109	106
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	111	112	111	110	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	113	111	109	111	112
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	104	111	100	109	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	109	116	112	109	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	112	107	109	112	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	107	113	113	105	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	105	99	101	95	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	125	122	136	121	122
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	126	125	124	125	124
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	119	125	124	117	122
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	107	113	114	114	112
Extracted ISTD d <sub>3</sub> N MeFOSA	%	106	107	106	108	106
Extracted ISTD d <sub>5</sub> N EtFOSA	%	99	103	102	103	96
Extracted ISTD d <sub>7</sub> N MeFOSE	%	120	121	119	117	115
Extracted ISTD d <sub>9</sub> N EtFOSE	%	100	107	103	103	99
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	116	120	125	118	118
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	116	114	116	124	117
Total Positive PFHxS & PFOS	µg/L	5.2	0.44	22	0.22	0.07
Total Positive PFOA & PFOS	µg/L	4.3	0.02	16	0.06	<0.01
Total Positive PFAS	µg/L	5.8	0.59	27	0.32	0.07

PFAS in Waters Extended			
Our Reference		310531-14	310531-15
Your Reference	UNITS	0908_QC203_22 1110	0908_QC215_22 1110
Date Sampled		10/11/2022	10/11/2022
Type of sample		Water	Water
Date prepared	-	17/11/2022	17/11/2022
Date analysed	-	18/11/2022	18/11/2022
Perfluorobutanesulfonic acid	µg/L	0.31	<0.01
Perfluoropentanesulfonic acid	µg/L	0.34	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	9.6	<0.01
Perfluoroheptanesulfonic acid	µg/L	2.4	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	31	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.06	<0.02
Perfluoropentanoic acid	µg/L	0.2	<0.02
Perfluorohexanoic acid	µg/L	0.90	<0.01
Perfluoroheptanoic acid	µg/L	0.28	<0.01
Perfluorooctanoic acid PFOA	µg/L	2.8	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	94	100
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	102	102
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	86	105
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	94	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	97	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	55	112

PFAS in Waters Extended			
Our Reference		310531-14	310531-15
Your Reference	UNITS	0908_QC203_22 1110	0908_QC215_22 1110
Date Sampled		10/11/2022	10/11/2022
Type of sample		Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	90	106
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	107	113
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	99	114
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	104	107
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	99	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	105	106
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	107	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	104	109
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	84	89
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	129	133
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	112	129
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	103	113
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	109	115
Extracted ISTD d <sub>3</sub> N MeFOSA	%	100	109
Extracted ISTD d <sub>5</sub> N EtFOSA	%	96	105
Extracted ISTD d <sub>7</sub> N MeFOSE	%	112	124
Extracted ISTD d <sub>9</sub> N EtFOSE	%	108	109
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	132	140
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	106	114
Total Positive PFHxS & PFOS	µg/L	41	<0.01
Total Positive PFOA & PFOS	µg/L	34	<0.01
Total Positive PFAS	µg/L	48	<0.01

Method ID	Methodology Summary
<p><b>Inorg-008</b></p> <p><b>Org-029</b></p>	<p>Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.</p> <p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	310531-3
Date prepared	-			17/11/2022	2	17/11/2022	17/11/2022		17/11/2022	17/11/2022
Date analysed	-			18/11/2022	2	18/11/2022	18/11/2022		18/11/2022	18/11/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	111	118
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	101	100
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	2	0.2	0.2	0	105	95
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	107	105
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	2	2.2	2.3	4	101	90
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	109	78
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	100	97
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	102	110
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	108	98
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	106	104
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	105	106
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	110	107
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	2	<0.5	<0.5	0	109	109
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	2	<0.5	<0.5	0	113	113
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	2	<0.5	<0.5	0	109	111
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	2	<0.5	<0.5	0	115	113
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	2	<5	<5	0	104	96
4:2 FTS	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	105	100
6:2 FTS	µg/kg	0.1	Org-029	<0.1	2	<0.1	<0.1	0	103	97
8:2 FTS	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	95	96
10:2 FTS	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	96	75
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	2	<1	<1	0	105	102
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	2	<1	<1	0	104	102
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	2	<1	<1	0	109	105
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	2	<1	<1	0	100	91
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	2	<5	<5	0	105	100
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	103	104
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	2	<0.2	<0.2	0	104	126
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	102	2	101	101	0	102	101
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	100	2	101	104	3	102	103

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	310531-3
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	98	2	75	80	6	94	69
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	97	2	84	93	10	96	79
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	97	2	75	77	3	98	68
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	101	2	76	82	8	100	75
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	100	2	79	83	5	100	71
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	95	2	84	92	9	98	79
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	100	2	87	96	10	98	81
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	101	2	80	84	5	97	76
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	96	2	60	63	5	97	65
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	99	2	45	52	14	100	59
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	103	2	45	45	0	94	30
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	101	2	50	54	8	100	44
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	118	2	62	66	6	115	55
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	104	2	106	118	11	104	93
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	111	2	140	144	3	102	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	105	2	91	104	13	104	84
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	108	2	40	44	10	104	45
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	100	2	33	38	14	98	36
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	98	2	36	41	13	94	37
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	102	2	40	43	7	105	48

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	310531-3
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	99	2	36	38	5	96	45
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	97	2	44	50	13	96	55
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	101	2	47	51	8	95	38



QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	310531-4
Date prepared	-			17/11/2022	1	17/11/2022	17/11/2022		17/11/2022	17/11/2022
Date analysed	-			18/11/2022	1	18/11/2022	18/11/2022		18/11/2022	18/11/2022
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	108
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	101
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	99
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	108
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	96
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	98
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	94	101
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	109
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	92
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	102
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	98
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	97
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	96
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	98
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	94	98
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	94	101
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	95	98
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	97
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	95	99
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	100
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	110	107
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	100
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	98	98
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	103
N-Me perfluorooctanesulfonamid ethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	92	92
N-Et perfluorooctanesulfonamid ethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	102
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	104
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	105
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	97	1	103	102	1	95	100
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	100	1	101	102	1	101	99

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	310531-4
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	103	1	99	101	2	103	99
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	103	1	104	103	1	105	106
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	108	1	104	101	3	102	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	115	1	92	94	2	111	82
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	111	1	102	105	3	107	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	110	1	106	112	6	105	114
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	109	1	109	109	0	104	114
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	108	1	110	110	0	103	110
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	108	1	109	109	0	106	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	109	1	114	110	4	108	113
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	107	1	108	106	2	108	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	119	1	112	109	3	116	109
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	101	1	94	99	5	98	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	120	1	116	124	7	113	132
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	122	1	122	122	0	118	123
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	119	1	122	115	6	111	114
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	115	1	112	113	1	107	109
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	108	1	107	106	1	104	107
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	102	1	100	101	1	98	102
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	122	1	121	117	3	117	119

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	310531-4
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	106	1	103	104	1	102	107
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	119	1	114	117	3	113	114
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	119	1	119	117	2	117	115

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	14	17/11/2022	17/11/2022		[NT]	[NT]
Date analysed	-			[NT]	14	18/11/2022	18/11/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	0.31	0.30	3	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	0.34	0.35	3	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	14	9.6	9.9	3	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	14	2.4	2.4	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	14	31	33	6	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	14	0.06	0.06	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	14	0.2	0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	14	0.90	0.91	1	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	14	0.28	0.28	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	14	2.8	2.9	4	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	14	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	14	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	[NT]	14	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid ethanol	µg/L	0.05	Org-029	[NT]	14	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid ethanol	µg/L	0.5	Org-029	[NT]	14	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	14	<0.02	<0.02	0	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	[NT]	14	94	100	6	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	[NT]	14	102	103	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	[NT]	14	86	87	1	[NT]	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	[NT]	14	94	93	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	[NT]	14	97	92	5	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	[NT]	14	55	58	5	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	[NT]	14	90	89	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	[NT]	14	107	107	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	[NT]	14	99	102	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	[NT]	14	104	101	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	[NT]	14	99	99	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	[NT]	14	105	106	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	[NT]	14	107	110	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	[NT]	14	104	106	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	[NT]	14	84	85	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	[NT]	14	129	136	5	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	[NT]	14	112	109	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	[NT]	14	103	107	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	[NT]	14	109	110	1	[NT]	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	[NT]	14	100	106	6	[NT]	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	[NT]	14	96	102	6	[NT]	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	[NT]	14	112	113	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	[NT]	14	108	110	2	[NT]	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	[NT]	14	132	133	1	[NT]	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	[NT]	14	106	104	2	[NT]	[NT]

## Result Definitions

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.



## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]

### Sample Login Details

<b>Your reference</b>	60612562_2.1, NSW_0908_PFASOMP
<b>Envirolab Reference</b>	310531
<b>Date Sample Received</b>	14/11/2022
<b>Date Instructions Received</b>	14/11/2022
<b>Date Results Expected to be Reported</b>	22/11/2022

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	12 Water, 4 Soil
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	12
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

<b>Phone: 02 9910 6200</b>	<b>Phone: 02 9910 6200</b>
<b>Fax: 02 9910 6201</b>	<b>Fax: 02 9910 6201</b>
<b>Email: [REDACTED]</b>	<b>Email: [REDACTED]</b>

Analysis Underway, details on the following page:



Sample ID	PFAS in Soils Extended	PFAS in Waters Extended
0908_QC200_221107		✓
0908_QC202_221107	✓	
0908_QC204_221107	✓	
0908_QC206_221107		✓
0908_QC208_221108		✓
0908_QC210_221108		✓
0908_QC212_221109		✓
0908_QC214_221110		✓
0908_QC205_221110		✓
0908_QC207_221108	✓	
0908_QC209_221109		✓
0908_QC213_221109		✓
0908_QC201_221110		✓
0908_QC203_221110		✓
0908_QC215_221110		✓
0908_QC211_221109	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.





# Sampling Event Factual Report, May 2023

PFAS OMP - RAAF Base Williamtown

17-Jan-2024

Doc No. 20240117\_OMP002\_WLM\_SamplingEventFactualReport\_Rev0

# Sampling Event Factual Report, May 2023

PFAS OMP - RAAF Base Williamtown

Client: Department of Defence

ABN: 68706814312

Prepared by

**AECOM Australia Pty Ltd**

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17-Jan-2024

Job No.: 60612562

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.





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## List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AIR	Annual Interpretive Report
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
JBT	Jervis Bay Territory
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Analytical Testing Authority
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMIR	Ongoing Monitoring Interpretive Report
OMP	Ongoing Monitoring Plan
ORP	Oxidation Reduction Potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control

Acronym	Term
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan
SD	Sediment
SW	Surface Water
SWL	Standing Water Level
TOC	Top of Casing
WQM	Water Quality Meter

## List of Units

Units	Term
°C	Degrees Celsius
µg/L	Micrograms per Litre
µS/cm	MicroSiemens per centimetre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mV	MilliVolts

## 1.0 Introduction

### 1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the RAAF Base Williamtown (the 'Site', Site ID 0908) and the Williamtown Management Area in the New South Wales (NSW) and Jervis Bay Territory (JBT) Region. The location of the Site and Management Area is shown in **Figure F1** in **Appendix A**.

The OMP (AECOM, 2019) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Ongoing Monitoring Interpretive Reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the May 2023 annual sampling event, specifically highlighting first-time detections and/or new exceedances of human health or ecological screening criteria for the sum of perfluorooctane sulfonic acid (PFOS) and perfluorohexane sulfonic acid (PFHxS) (herein referred to as PFOS+PFHxS), PFOS and/or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance (Version 0.2)* issued in May 2021 (Defence, 2021).

### 1.2 Objectives

The objectives were to:

- implement the OMP (AECOM, 2019) prepared as part of the Detailed Environmental Investigations; and
- collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of PFAS.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

The objective of this phase of works was to implement the scope of works for the May 2023 annual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2023).

## 2.0 Scope of Work

The scope of works was completed generally in accordance with the SAQP (AECOM, 2023), as follows:

- obtain permission (where required) to conduct works at the Site, off-Site publicly accessible areas and at private properties
- gauging of groundwater level in monitoring wells prior to collection of samples
- groundwater sampling and collection of water quality parameters at 139 of 147 scheduled monitoring wells and bores (refer to **Table 1** below and **Figure F2** in **Appendix A** for specific locations), noting that 2 of the scheduled monitoring wells were also re-sampled and analysed to confirm original results
- surface water sampling and collection of water quality parameters at all 22 scheduled surface water locations (refer to **Table 2** below and **Figure F3** in **Appendix A** for specific locations)
- sediment sampling at all 25 scheduled sediment locations (refer to **Table 3** below and **Figure F4** in **Appendix A** for specific locations)
- soil sampling at all 12 scheduled soil locations (refer to **Table 4** below and **Figure F5** in **Appendix A** for specific locations)
- collection of field duplicate samples at a rate of 1 in 10 primary samples
- analysis of samples for PFAS suite at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of Sampling Event Factual Report.

The deviations from the scheduled scope of works are discussed in detail in **Section 3.0**.

Note: due to privacy considerations, selected monitoring locations are unable to be shown on the figures in **Appendix A**.

**Table 1** Groundwater Sampling Locations

On/Off-Site	Area	Sampling Location	Total
On-Site	Former & Current Fire Station (Facility 165)	MW196, MW198, MW200, MW201S, MW201D, MW202S, MW202D	7
	Former Fire Training Area / Pit (Facility 479)	MW166, MW167, MW168, MW169S, MW169D	5
	Former DEMS Landfill (Facility 394)	MW171S, MW171D, MW172, MW240D, MW281S, MW282S	6
	Ordnance Loading Area	MW244S, MW244D	2
	Lake Cochran	MW108S, MW108D, MW109D, MW175D, MW179S, MW179D, MW466, MW468	8
	Northeast Landfill	MW156D, MW209S*, MW209D*, MW406, MW433	5
	Trade Waste Treatment Plant (Facility 480)	MW106S, MW106D, MW155, MW208, MW210S, MW210D, MW212	7
	HWC Pump Station 7 (PS7)	MW134I, MW134D, MW245S, MW245D, MW317S, MW317D	6

On/Off-Site	Area	Sampling Location	Total
Off-Site	Background	MW158S, MW158D, MW264S, MW264D	4
	Cabbage Tree Road	MW124, MW125S, MW125D, MW126S, MW126D, MW137, <b>MW139</b> , MW140, MW178, MW229S*, MW229D*, <b>MW230S, MW236S, MW236D, MW238D, MW238S, POT085, POT107</b>	18
	East of Site - HWC Pump Station 9 (PS9)	MW130S, MW130D, MW132S, MW132D, MW159S, MW159D, MW160, MW318S, MW318D, MW829, MW842, MW844	12
	East of Site - Moors Drain	<b>MW161S, MW161D</b> , MW247S, MW247D, <b>POT046</b>	5
	East of Site – Nelson Bay Road	MW121, MW122, MW150S, MW150D, MW162S, MW162D	6
	Fullerton Cove	<b>MW147D, MW147S, MW231D, MW231S, MW232S, MW232D, MW270D**, MW270S**, POT236, POT257, POT382</b>	11
	Lavis Lane	MW128S, MW128D, MW163, MW195, MW279S, MW316D	6
	Salt Ash	MW118*, MW123, MW252S, MW255S, MW255D, MW256S, MW256D, MW257S, MW257D, MW258S, MW258D, MW260S, MW260D, MW263D, MW263S, <b>POT087, POT089, POT144</b>	18
	Southern Area	MW104S, MW104D, MW146S, MW146AD, MW184S, MW184D, MW188S, MW188D*, <b>MW271S, MW271D</b> , MW278S, MW278D	12
	West of Site	MW103S*, MW103D*, MW107S, MW107D, MW241S, MW241D, MW280S, MW315S, MW315D	9
<b>Total</b>			<b>147</b>
* Location not sampled			
** Location re-sampled to confirm results			
<b>Bold</b> text denotes private property location			

Table 2 Surface Water Sampling Locations

Area	Sampling Location
Lake Cochran & On-Site Drains	SW047, SW048, SW108, SW110
Dawsons Drain	SW055, SW059, SW060
Fourteen Foot Drain	SW062, <b>SW600</b>
Ten Foot Drain	SW081
Moors Drain	SW001, SW005, SW006, SW007, SW009, SW011, SW014
Fullerton Cove Ring Drain	<b>SW259</b>
Tilligerry Creek	<b>SW019</b> , SW023, SW024, SW079
<b>Total</b>	<b>22</b>
<b>Bold</b> text denotes private property location	

**Table 3 Sediment Sampling Locations**

Area	Sampling Location
Lake Cochran & On-Site Drains	SD047, SD048, SD108, SD110
Dawsons Drain	SD055, SD059, SD060
Fourteen Foot Drain	SD062, <b>SD600</b>
Ten Foot Drain	SD081
Moors Drain	SD001, SD005, SD006, SD007, SD009, SD011, SD014
Fullerton Cove Ring Drain	<b>SD259</b>
Fullerton Cove (tidal gate outlet)	<b>SD254, SD255, SD326</b>
Tilligerry Creek	<b>SD019</b> , SD023, SD024, SD079
<b>Total</b>	<b>25</b>
<b>Bold</b> text denotes private property location	

**Table 4 Soil Sampling Locations**

Area	Sampling Location	Number of locations
<b>Flood Areas</b>	2 per flood area	SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112
<b>Total</b>		<b>12</b>
Note: Soil samples were collected from the designated flood areas outlined in the OMP (AECOM, 2019)		



### 3.0 Deviations from the SAQP

The May 2023 annual sampling event was completed in general accordance with the SAQP (AECOM, 2023) with the exception of the deviations outlined in **Table 5** below.

**Table 5** Deviations from SAQP

SAQP Deviation	Comment / Justification	Impact on Dataset
<p>Samples, and associated gauging data and field parameters, were not collected from 8 of the 147 scheduled groundwater sampling locations.</p>	<p>Groundwater monitoring wells MW103S and MW103D could not be accessed due to dense bushland and wet/overgrown tracks, therefore could not be gauged and sampled during this event.</p> <p>Groundwater monitoring well MW118 was observed to be damaged and blocked at 0.915 mbTOC, therefore could not be sampled during this event. The gatic was likely damaged as a result of the recent roadworks in the area (on Richardson Road).</p> <p>Groundwater monitoring well MW188D could not be located, likely destroyed as a result of recent roadworks in the area (on Cabbage Tree Road), therefore could not be gauged and sampled during this event.</p> <p>Groundwater monitoring wells MW209S and MW209D were covered by a soil stockpile and could not be gauged and sampled during this event.</p> <p>Groundwater monitoring wells MW229S and MW229D could not be located due to dense grass cover, despite the use of a metal detector, therefore could not be gauged and sampled during this event.</p>	<p>The lack of gauging and sampling data for these monitoring wells are not considered to have a significant impact on the dataset, or present a significant data gap, as other nearby monitoring wells were able to be gauged and sampled during this event, as follows:</p> <ul style="list-style-type: none"> <li>• MW315S/D and MW280S for MW103S/D</li> <li>• MW123 and MW256S for MW118</li> <li>• MW126D and MW188S for MW188D</li> <li>• MW156D and MW433 for MW209S/D</li> <li>• MW125S/D and MW146S/AD for MW229S/D</li> </ul>
<p>Gauging data was not collected from 7 of the selected 33 monitoring wells part of the gauging round.</p>	<p>Groundwater monitoring wells MW122, MW124, MW188D, MW209S/D and MW229S/D were not gauged during the gauging round of selected groundwater locations (to be conducted on the same day to enable groundwater contours to be developed).</p> <p>Groundwater monitoring wells MW188D, MW209S/D and MW229S/D were not able to be accessed (as described above).</p> <p>Groundwater monitoring wells MW122 and MW124 were not found during the initial visit on the gauging round, but were later located, gauged and sampled during the sampling event.</p>	<p>The lack of gauging data for these monitoring wells are not considered to have a significant impact on the dataset, as other representative monitoring wells were able to be gauged, enabling development of the groundwater elevation contours.</p>

SAQP Deviation	Comment / Justification	Impact on Dataset
Sample, and associated field parameters, were collected from unscheduled groundwater sampling locations.	Groundwater location MW471 was inadvertently sampled during this sampling event as it was confused with the nearby location. The actual location was eventually sampled.	The additional data collected is not considered to have an impact on the dataset as the data will not be considered for reporting purposes.
An unscheduled surface water and co-located sediment sample was collected in the vicinity of a scheduled surface water location.	<p>During the sampling event, foam of unknown origin was observed at off-Site surface water location SW024 (targeting Tilligerry Creek), which was sampled in the previous sampling event.</p> <p>On a request by Defence, AECOM returned to the location the following week to collect a sample of the foam. Although the foam had dissipated upon return, the field team observed unknown material along the bank near the stormwater culverts. An unscheduled, opportunistic surface water sample and co-located sediment sample where the material was observed (denoted as SW158 and SD158) were collected and submitted for PFAS analysis.</p>	<p>The additional data collected is not considered to have an impact on the dataset.</p> <p>The surface water and sediment sample (SW158 and SD158) results will be discussed in the next Ongoing Monitoring Interpretive Report (which will cover data from July 2022 to June 2023).</p>
Resampling of 2 of the 147 scheduled groundwater sampling locations.	<p>Groundwater monitoring wells MW270S and MW270D, located on a private property, were sampled during this event. It was noted that PFAS concentrations had increased at MW270S since sampling in 2021, and that the concentration of PFOS+PFHxS reported in May 2023 was equal to the Drinking water guideline criteria (0.07 µg/L). The sample was re-analysed, and PFAS concentrations were confirmed.</p> <p>Given MW270S, and its paired deep well MW270D (where no PFAS detection have been reported to date), are key to the understanding of the Site, both wells were re-sampled on 9 August 2023.</p>	<p>Given that the additional sampling of MW270S and MW270D confirmed the original results (see further details in <b>Section 4.3</b> and <b>Table T9</b> in <b>Appendix B</b>), there is no impact on the dataset.</p> <p>Note that any changes to the understanding of the Conceptual Site Model will be discussed in the next Ongoing Monitoring Interpretive Report.</p>
Groundwater samples at 3 of the 147 scheduled groundwater sampling locations were not collected using no-purge methodology with HydraSleeves™, or with the alternative high-density polyethylene (HDPE) bailer, used in	<p>Due to the narrow PVC of monitoring wells MW842 and MW844, no HydraSleeve™ was able to be installed, and a sample was collected using a peristaltic pump with dedicated sample tubing.</p> <p>At location MW829, groundwater was collected with a bailer as the location is a non-traditional well with no well cap</p>	<p>Note that these sampling methodologies have been previously used at these locations under the OMP scope of works, therefore there is no impact on the dataset.</p> <p>The SAQP will be updated to reflect the need for a specific</p>

SAQP Deviation	Comment / Justification	Impact on Dataset
the event that a HydraSleeve™ fails to deploy or has been removed inadvertently and time or access constraints do not permit re-deployment of the HydraSleeve™.	or gatic (pump station bore / sampling point).	sampling methodology for these locations.

## 4.0 Methodology

### 4.1 Sampling Methodology

The methodology used for the May 2023 annual sampling event was in general accordance with the SAQP (AECOM, 2023) and is summarised in **Table 6** below.

**Table 6 Sampling Methodology**

Item	Details
Groundwater gauging	<p>The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples.</p> <p>In addition, a targeted gauging round including 33 selected monitoring wells was completed to generate data for the groundwater elevation contours and assess groundwater flow direction. It is noted that, of the selected locations, a total of seven locations were not able to be gauged, as the locations were either not able to be accessed or were not found during the targeted gauging round. The targeted gauging round was completed on the first day of the sampling event, 8 May 2023.</p> <p>Measurements of depth to groundwater were undertaken using an interface probe, which was serviced by the supplier prior to use. The equipment supplier records are provided in <b>Appendix C</b>.</p>
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for groundwater and surface water samples.</p> <p>Water quality parameters were collected using a calibrated water quality meter (WQM). The equipment supplier and field calibration records are provided in <b>Appendix C</b>.</p>
Sampling methodology	<p><b>Groundwater Monitoring Wells</b></p> <p>Groundwater samples were generally collected from each monitoring well using HydraSleeves™, a no-purge sampling methodology.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 4 hours prior to the sampling round, based on a review of the well construction log. All HydraSleeves™ were installed with bottom weights only. For this event, all the HydraSleeves™ were installed during the previous sampling event in November 2022 as well as this sampling event in May 2023.</p> <p>HydraSleeves™ were not found in the following monitoring wells: MW123, MW125S, MW125D, MW126S, MW126D, MW146S, MW146AD, MW150S, MW150D, MW158S, MW158D, MW162S, MW162D, MW188S, MW232S, MW232D and MW280S. At these locations AECOM installed HydraSleeves™ and returned after a minimum of 4 hours to collect the groundwater samples.</p> <p>Once sampling was completed, new HydraSleeves™ were deployed in each of the monitoring wells, within the screened interval depth in preparation for the next sampling round.</p> <p>At locations where the HydraSleeves™ were not suitable for use, AECOM collected groundwater samples using dedicated, disposable bailers or a peristaltic pump.</p> <p>During this sampling event, a bailer was used at monitoring location MW433 as AECOM observed the well to be blocked at 2.810 mbTOC, with the blockage likely cause by the Hydrasleeve itself, which was unable to be dislodged. Before</p>

Item	Details
	<p>sampling with a bailer, purging of the well was completed in accordance with the SAQP (water was purged until water quality parameters had stabilised).</p> <p>At location MW829, groundwater was collected with a bailer as the location is a non-traditional well with no well cap or gatic (pump station bore / sampling point). At locations MW842 and MW844, the diameter of the well casings was too small to accommodate a HydraSleeve™ or disposable bailer, therefore groundwater samples were collected using a peristaltic pump with dedicated sample tubing.</p> <p>At each location, new laboratory supplied containers were used with the cap immediately applied once the container was full.</p> <p><b>Residential Bores</b></p> <p>Bore water samples were collected by placing a laboratory provided sample bottle beneath the tap outlet to collect the “first flush” of water. At each location, new laboratory supplied containers were used with the cap immediately applied once the container was full.</p> <p><b>Surface Water</b></p> <p>Surface water samples were collected from either mid-way through the water column or approximately 0.5 m below the surface, without disturbing the bottom of the surface water body, and without capturing any surface film or floating materials in the samples.</p> <p>At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p> <p><b>Sediment</b></p> <p>Sediment samples representative of potentially deposited sediments were collected from within the water body, using a hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). A new laboratory supplied container was used at each location for collection of samples.</p> <p><b>Soil</b></p> <p>Soil samples were collected using a hand trowel to a maximum depth of 0.1 mbgl. A new laboratory supplied container was used at each location for collection of samples.</p>

Item	Details
QA/QC Samples	<p>A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained.</p> <p>To facilitate the QA/QC program the following sample types were obtained during the sampling program:</p> <ul style="list-style-type: none"> <li>• <i>Intra-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the limit of reporting (LOR). Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Inter-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The RPD should be less than 30%, or less than 50% if results are less than 20 times the LOR. Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Rinsate blanks</i> collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory LOR.</li> </ul> <p>For this May 2023 annual sampling event, the QA/QC samples included:</p> <ul style="list-style-type: none"> <li>• 21 x intra-laboratory duplicates (12 groundwater, 4 surface water, 3 sediment and 2 soil) which met the total target frequency</li> <li>• 21 x inter-laboratory duplicates (12 groundwater, 3 surface water, 4 sediment and 2 soil) which met the total target frequency</li> <li>• 11 x rinsate blanks, which met the target frequency.</li> </ul> <p>The data validation assessment is presented in <b>Appendix D</b>.</p>
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for PFAS suite at the standard LOR.</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>A summary of the laboratory results is presented in <b>Section 5.3</b> and the laboratory certificates are presented in <b>Appendix E</b>.</p>

## 4.2 Adopted Screening Criteria

Guidance documents used to assess the dataset include the following:

- Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.
- Department of Health, 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS)*.
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** and **Table 8** below.

It is noted that, at the time of preparing this report, the PFAS NEMP (HEPA, 2020) did not provide any screening criteria for PFAS in sediments.

**Table 7 Summary of Adopted Screening Criteria: Water**

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>				
Water – Groundwater and Surface Water	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the Tolerable Daily Intake (TDI) for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values.
		PFOA	0.56 µg/L	For PFHxS, DoH 2017 noted that ' <i>FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS.</i>
Water – Surface Water	Recreational use	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted in the PFAS NEMP, 2020.
		PFOA	10 µg/L	
<i>All groundwater and surface water results were compared to these criteria.</i>				
<i>All surface water results were compared to these criteria.</i>				

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Ecological Receptors</b>				
Water – Groundwater and Surface Water	Freshwater	PFOS	0.00023 µg/L	<p>The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.</p> <p>The 99% species protection level (for freshwater and interim marine) has been applied for high value conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.</p> <p><i>All groundwater and surface water results were compared to these criteria.</i></p>
		PFOA	19 µg/L	



Table 8 Summary of Adopted Screening Criteria: Soil

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>				
Soil	Public Open Space	PFOS + PFHxS	1 mg/kg	<p>The values presented in the PFAS NEMP, 2020 are based on 20% of FSANZ TDI, i.e. up to 80% of exposure is assumed to come from other pathways.</p> <p>The assumptions utilised in the derivation of the criteria in terms of exposure are adopted from the NEPM, 2013 Health Investigation Level D. The values make several assumptions including 8 hours spent indoors and 1 hour spent outdoors at a site such as a shop, office, factory or industrial site.</p> <p>The PFAS NEMP, 2020 notes these soil guidance values should only be used to assess potential human exposure through direct soil contact, with simultaneous investigation of other factors including leaching, off-Site transport, bioaccumulation and secondary exposure. Further, the degree of conservatism in the soil criteria means that exceeding these values does not necessarily indicate an unacceptable risk to human health, provided other exposure pathways are controlled.</p> <p><i>The off-Site soil results were compared to the most relevant exposure scenario (Public Open Space for soil samples collected from flood areas).</i></p>
		PFOA	10 mg/kg	
<b>Ecological Receptors</b>				
Soil	Interim soil ecological -indirect exposure (All land uses)	PFOS	0.01 mg/kg	<p>The values are presented in the PFAS NEMP, 2020 which published interim guidance values for ecological receptors, for use in site investigations. The values were adopted from Canadian Federal Environmental Quality Guidelines, 2017 for Commercial and Industrial use (coarse soil). The values are assumed to protect against potential impacts on freshwater life from PFOS originating from soil that may enter surface water and groundwater.</p>
		PFOS	1 mg/kg	<p>The values are considered for interim use noting further research is required to review and amend (if necessary) these values for Australian conditions.</p>
	Interim soil ecological – direct exposure (All land uses)	PFOA	10 mg/kg	<p><i>All soil results collected from off-Site open space areas (soil samples collected from flood areas) were compared against the direct and indirect screening criteria.</i></p>

### 4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023). Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

Following the reporting of PFAS concentrations which were first-time detections at MW108D, MW162D (for QC215 sample) and MW317D, the primary and secondary laboratories were requested to repeat the analysis which confirmed the originally reported concentrations.

Given the potentially increasing concentrations of PFAS in monitoring well MW270S, located south of the known plume extent, the primary laboratory was requested to repeat the analysis, which confirmed the originally reported concentrations.

Additionally, MW270S and MW270D, were re-sampled on 9 August 2023 to confirm the results for samples collected on 16 May 2023. The new results for MW270S were generally consistent with the originally reported concentrations; however, PFOS concentrations were just above the LOR (0.03 µg/L) for the sample collected in May 2023 and below the LOR for the sample collected in August 2023. The new results for MW270D confirmed the originally reported concentration, with all PFAS concentrations below the LOR.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) requirements.

## 5.0 Field Observations and Results

### 5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the May 2023 annual sampling event completed between 8 and 26 May 2023, with re-sampling of selected locations completed on 9 August 2023, are summarised in **Table 9** below.

**Table 9** General Observations

Items	Observations
Weather Conditions	<p>During the sampling event, the weather was observed to be mostly dry and cool, with maximum daily temperatures between 17.1 °C (17 May 2023) and 22.6 °C (25 May 2023).</p> <p>A cumulative 41 mm of rainfall was recorded at Williamtown (Williamtown RAAF, Station 061078) (Bureau of Meteorology, 2023) during the sampling event (including the re-sampling in August 2023), with most of the rainfall recorded on 18 May 2023 (22.2 mm).</p>
Estate Management Works, Training Activities and/or Construction Works.	<p>During the May 2023 sampling event, monitoring wells MW209S and MW209D could not be accessed due to the presence of soil stockpiles over the wells, located in the Northeast Landfill area.</p> <p>No other estate management works, training activities or construction works were observed during the sampling event, that would impact the sampling program.</p>

### 5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the May 2023 annual sampling event are summarised in **Table 10**, below.

**Table 10** Field Observations and Measurements

Item	Description
Monitoring Well Network Condition	<p>All wells sampled were observed to be in good condition with the exception of the following:</p> <ul style="list-style-type: none"> <li>MW103S, MW103D, MW188D, MW229S and MW229D were unable to be assessed as the wells were not able to be located. MW209S and MW209D were unable to be accessed as the wells were buried beneath soil stockpiles. AECOM will attempt to locate/access these wells during the next scheduled sampling event.</li> <li>MW106S had a HydraSleeve™ in the well that was unable to be retrieved, causing a blockage at approximately 4 mbTOC. A new HydraSleeve™ was installed above the blockage, remaining in part within the screened interval (3.5 to 5 m). AECOM will attempt to retrieve the HydraSleeve™ again during the next scheduled sampling event.</li> <li>MW118 was damaged and blocked at 0.915 mbTOC. The gatic box was severely damaged, likely from the roadworks in the area. The blockage in the well may be caused by a Hydrasleeve™, unable to be dislodged from the well. Given the blockage was above the screen and there may have been surface water ingress from the damaged gatic box, this location was not sampled. AECOM will attempt to repair the well during the next scheduled sampling event.</li> </ul>

Item	Description
	<ul style="list-style-type: none"> <li>• MW128D had a missing a J-cap (well plug), which was replaced at the time of sampling. Given the gatic lid was secured, water ingress into the well was unlikely.</li> <li>• MW150D and MW257S had sediment and roots in well gatics above top of casing. The sediment was removed prior to sampling at these locations</li> <li>• MW155, MW184S, MW198, MW238D and MW260 had damaged or missing gatic lids. MW155 also had water in the well gatic, below top of casing. Given that the J-cap was secured, water ingress in these wells was unlikely. AECOM replaced the damaged gatic lid at MW155 and will attempt to repair and/or replace the rest of the damaged or missing gatic lids ahead of the next scheduled sampling event</li> <li>• MW188S had an additional Hydrasleeve™ at the bottom of the well, which was causing a blockage in the well, this was able to be removed and a sample was collected from the appropriately placed Hydrasleeve™</li> <li>• MW195, MW202D, MW202S, MW208, MW212, MW236D, MW236S were missing the gatic lid bolts. AECOM will attempt to replace bolts during the next scheduled sampling event</li> <li>• MW231D and MW252S had water in well gatics above top of casing. The water was removed prior to sampling at each location</li> <li>• MW241S had a loose J-cap. Given the gatic lid was secured, water ingress into the well was unlikely. AECOM has secured the J-cap</li> <li>• MW245S may be blocked based on gauged depth to base and well construction details. AECOM did not observe any sediment on the interface probe, to indicate build-up of silt at base of well</li> <li>• MW433 was significantly damaged and blockage at 2.810 mbTOC. The well monument was found lying on grass beside the PVC stick-up, with duct tape around edge of PVC securing HydraSleeve string. The J-cap was not secured; therefore, water ingress may have occurred during rain. The blockage in the well may be caused by a Hydrasleeve™, unable to be dislodged from the well. AECOM placed the monument back in its place and sampled with a bailer. AECOM will attempt to remove the dropped HydraSleeve™ again during the next scheduled sampling event. The monument may also need to be secured/repaired.</li> </ul>
Water Observations	<p>Foam of unknown origin was observed at off-Site surface water location SW024 (targeting Tilligerry Creek). Upon return to this location, the foam had dissipated, and another unknown material was observed along the bank near the stormwater culvert in the vicinity of SW024. The material appeared to have white/blue colouration and was noted to be either seeping out from the bank or to have been washed up to the bank, extending to both the waters and sediments along the banks. While a sulfuric odour was noted in the general vicinity of the material, no defined odours were noted in the impacted surface water during sampling.</p> <p>No visible signs of contamination were observed in the remaining surface water and groundwater locations sampled.</p> <p>Sulphurous odours were noted at 45 groundwater locations (refer to <b>Table T1</b> in <b>Appendix B</b>). Organic odours were noted at 18 groundwater locations (MW104D, MW109D, MW158S, MW159S, MW168, MW171D, MW175D, MW195, MW232D, MW241S, MW241D, MW245D, MW258S, MW258D, MW263D, MW264D, MW317S and MW844) and one surface water location (SW600). Septic odours were noted at three groundwater locations (MW161S, MW166 and MW280S).</p>

Item	Description
Depth to Groundwater and Flow Direction	<p>Depth to groundwater ranged from 0.000 (MW231S, MW252S) and 2.825 (MW210D) metres below top of casing (mbTOC). Groundwater elevation ranged between -0.046 (MW128S) and 8.852 (MW264D) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in <b>Table T1</b> in <b>Appendix B</b>.</p> <p>The inferred groundwater flow direction is to the south and southeast, towards Tilligerry Creek and Fourteen Foot Drain, and to the north and northeast, towards the south of Tilligerry Creek, Fourteen Foot Drain and Ten Foot Drain (refer to <b>Figure F6-1</b> and <b>F6-2</b> in <b>Appendix A</b>), which was generally consistent with previous flow directions. Note that the groundwater elevation contours in <b>Figure F6-1</b> and <b>Figure F6-2</b> (in <b>Appendix A</b>) are based on the gauging of selected wells on 8 May 2023 to minimise the potential for temporal variability.</p>
Geochemical Parameters	<p>Groundwater and surface water geochemical parameters were measured during the collection of water samples. The readings are presented in <b>Table T2</b> and <b>Table T3</b> in <b>Appendix B</b> and are summarised below:</p> <p><b>Groundwater Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 0.21 mg/L (MW159D, MW844) to 5.14 mg/L (MW829) indicating poor to well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 6.33 µS/cm (MW255D) to 31,629 µS/cm (MW147D) indicating fresh to saline conditions.</li> <li>• pH ranged from 3.98 (MW130S) to 7.79 (MW128D) indicating moderately acidic to neutral conditions.</li> <li>• Redox ranged from 12.6 mV (MW231D) to 461.5 mV (MW201S) indicating mildly reducing to oxidising conditions.</li> </ul> <p><b>Surface Water Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 2.68 mg/L (SW059) to 8.46 mg/L (SW011) indicating generally well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 82.4 µS/cm (SW007) to 21,108 µS/cm (SW024) indicating fresh to saline conditions.</li> <li>• pH ranged from 5.12 (SW055) to 7.16 (SW259) indicating slightly acidic to neutral conditions.</li> <li>• Redox ranged from 161.8 mV (SW079) to 422.1 mV (SW110) indicating mildly reducing to oxidising conditions.</li> </ul>
Soil and Sediment Observations	<p>Soil and sediment sampled and logged during this monitoring event comprised sand, silt and clay materials with minor inclusions of gravels and trace shell fragments, and varying amounts of organic material (roots, leaves, grass).</p> <p>Upon return to location SW024 to inspect an observation of foam, another unknown material was observed along the bank near the stormwater culvert in the vicinity of SW024. The material appeared to have white/blue colouration and was noted to be either seeping out from the bank or to have been washed up to the bank, extending to both the waters and sediments along the banks. While a sulfuric odour was noted in the general vicinity of the material, no defined odours were noted when sampling the sediment impacted.</p> <p>No visible signs of contamination, anthropogenic inclusions or staining were observed in the remaining surface soil and sediment locations sampled.</p> <p>Organic odours were noted in 13 sediment locations (SD001, SD006, SD009, SD014, SD019, SD024, SD081, SD108, SD254, SD255, SD326 and SD600) and in five surface soil locations (SS103, SS104, SS105, SS110 and SS111).</p>

Item	Description
	Refer to in <b>Table T4</b> in <b>Appendix B</b> for a summary of soil and sediment classifications and observations.

## 5.3 Summary of Analytical Results

### 5.3.1 Groundwater Analytical Results

The groundwater PFAS analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary, 142 primary groundwater samples (including out-of-scope location MW471, which was inadvertently sampled, and the resampling at MW270S and MW270D) were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 87 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted human health screening criteria in 55 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 68 primary samples.

Deviations from the historical dataset are reported in **Table 11** and graphically on **Figure F7** in **Appendix A**.

**Table 11** Deviations from Historical Dataset: Groundwater

Deviation Type	Groundwater sampling location	PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		May 2023	Previous maximum	May 2023	Previous maximum	May 2023	Previous maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in groundwater	MW108D	There were no first-time detections in the dataset.		0.02	<LOR	There were no first-time detections in the dataset.	
	MW162D	0.01	<LOR	There were no first-time detections in the dataset.		There were no first-time detections in the dataset.	
	MW317D	0.02	<LOR	There were no first-time detections in the dataset.		There were no first-time detections in the dataset.	
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines in groundwater	n/a	There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in groundwater	n/a	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		There are no applicable NEMP Ecological Screening Criteria (99%).	
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria						
<b>Note:</b> The first-time detection of PFOS+PFHxS in MW162D was reported in the inter-laboratory sample but not in the primary sample. n/a = not applicable.							

### 5.3.2 Surface Water Analytical Results

The surface water PFAS analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, 22 primary surface water samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 21 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted drinking water human health screening criteria in 21 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted recreational use human health screening criteria in 11 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 21 primary samples.

There were no first-time detections, or new exceedances of the adopted human health or ecological screening criteria for PFOS+PFHxS, PFOS and/or PFOA, in the surface water samples analysed.

### 5.3.3 Sediment Analytical Results

The sediment PFAS analytical results from this sampling event are presented in **Table T7** in **Appendix B**. In summary, 25 primary sediment samples were analysed for PFAS compounds, with concentrations of PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 24 primary samples.

There were no first-time detections for PFOS+PFHxS, PFOS and/or PFOA, in the sediment samples analysed.

### 5.3.4 Soil Analytical Results

The soil PFAS analytical results from this sampling event are presented in **Table T8** in **Appendix B**. In summary, 12 primary soil samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in all primary samples
- PFOS+PFHxS and/or PFOA did not exceed the adopted human health screening criteria in any primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in one primary sample.

There were no first-time detections, or new exceedances of the adopted human health or ecological screening criteria for PFOS+PFHxS, PFOS and/or PFOA, in the soil samples analysed.

## 5.4 Historical Sampling Data

Historical groundwater, surface water, sediment and soil sampling data are presented in **Table T9**, **Table T10**, **Table T11** and **Table T12** (respectively) in **Appendix B**.



## 6.0 Summary and Next Sampling Events

### 6.1 Summary of Monitoring Event

The May 2023 annual sampling event was completed between 8 and 26 May 2023, with re-sampling of selected locations on 9 August 2023. The findings and the recommended actions are summarised in **Table 12** below.

**Table 12 Summary of Sampling Event**

Item	Comment	Recommended Action
Access to sampling locations	<p>The following were accessed and able to be sampled:</p> <ul style="list-style-type: none"> <li>• 139 groundwater locations</li> <li>• 22 surface water locations</li> <li>• 25 sediment locations</li> <li>• 12 soil locations.</li> </ul>	Nil.
Location unable to be located, inaccessible or dry	<p>Two monitoring wells (MW103S and MW103D) could not be accessed due to dense bushland and wet/overgrown tracks.</p> <p>Three monitoring wells (MW188D, MW229S and MW229D) could not be located despite the use of a metal detector. These were either destroyed or covered by thick grass.</p> <p>Two monitoring wells (MW209S and MW209D) were covered by a stockpile of soil.</p>	AECOM will attempt to access and sample locations MW103S, MW103D, MW188D, MW209S, MW209D, MW229S and MW229D during the next scheduled sampling event.
Monitoring well network condition	<p>The monitoring wells that were able to be accessed and sampled were noted to be in good condition, with the exception of the following observed at some locations:</p> <ul style="list-style-type: none"> <li>• damaged well gatics or missing/damaged gatic lids (MW118, MW155, MW184S, MW198, MW238D and MW260)</li> <li>• blockages/obstructions (MW106S, MW118 and MW433)</li> <li>• had missing or unsecured J-caps (MW128D, MW433 and MW241S)</li> <li>• water in the well gatic, with the water either above or below top of casing (MW155, MW231D and MW252S)</li> <li>• soil and roots in well gatic (MW150D and MW257S)</li> <li>• missing bolts in the gatic lids (MW195, MW202D, MW202S, MW208, MW212, MW236D, MW236S).</li> </ul>	<p>AECOM will attempt to complete the following during the next scheduled sampling event:</p> <ul style="list-style-type: none"> <li>• replace gatic lids, J-caps and bolts which were damaged or missing</li> <li>• unblock/remove obstructions from monitoring wells MW106S, MW118 and MW433</li> <li>• repair MW118 (and inspect MW433 for possible repairs).</li> </ul>



Item	Comment	Recommended Action
Analytical Results	139 groundwater primary samples (plus another 2 from the re-sampling event), 22 surface water primary samples, 25 sediment primary samples and 12 soil primary samples were analysed.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
First-time detections of PFOS+PFHxS, PFOS and/or PFOA	<p>Three (MW108D, MW162D and MW317D) of the 139 groundwater locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.</p> <p>No surface water locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.</p> <p>No sediment locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.</p> <p>No soil locations sampled reported first-time detections of PFOS+PFHxS, PFOA and/or PFOS.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted human health screening criteria	<p>No groundwater locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>No surface water locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>No soil locations reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted ecological screening criteria	<p>No groundwater locations sampled reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>No surface water locations sampled reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>No soil locations reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

## 6.2 Upcoming Sampling Events

The next OMP sampling event is scheduled for November 2023.

## 6.3 Upcoming Ongoing Monitoring Interpretive Report

The next Ongoing Monitoring Interpretive Report is scheduled to be delivered in Q3 2023, which will cover the 12-month sampling period between July 2021 and June 2022.

## 7.0 References

- AECOM, 2019. *PFAS Ongoing Monitoring Plan – May 2019, RAAF Base Williamstown*. 27 May 2019.
- AECOM, 2023. *Sampling and Analysis Quality Plan, PFAS OMP - RAAF Base Williamstown*. Revision J, 26 April 2023.
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- Department of Defence, 2018. *Contamination Management Manual – Annex L Data Management*. August 2018, Amended June 2021.
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- Department of Health, 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS)*.
- Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.
- National Health and Medical Research Council (NHMRC), 2011. *Australian Drinking Water Guidelines 6, 2011. Version 3.7 Updated January 2022*. January 2022.
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.
- NEPC, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.
- NEPC, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.
- NEPC, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.
- Standards Australia (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*
- Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling*

# Appendix A

Figures

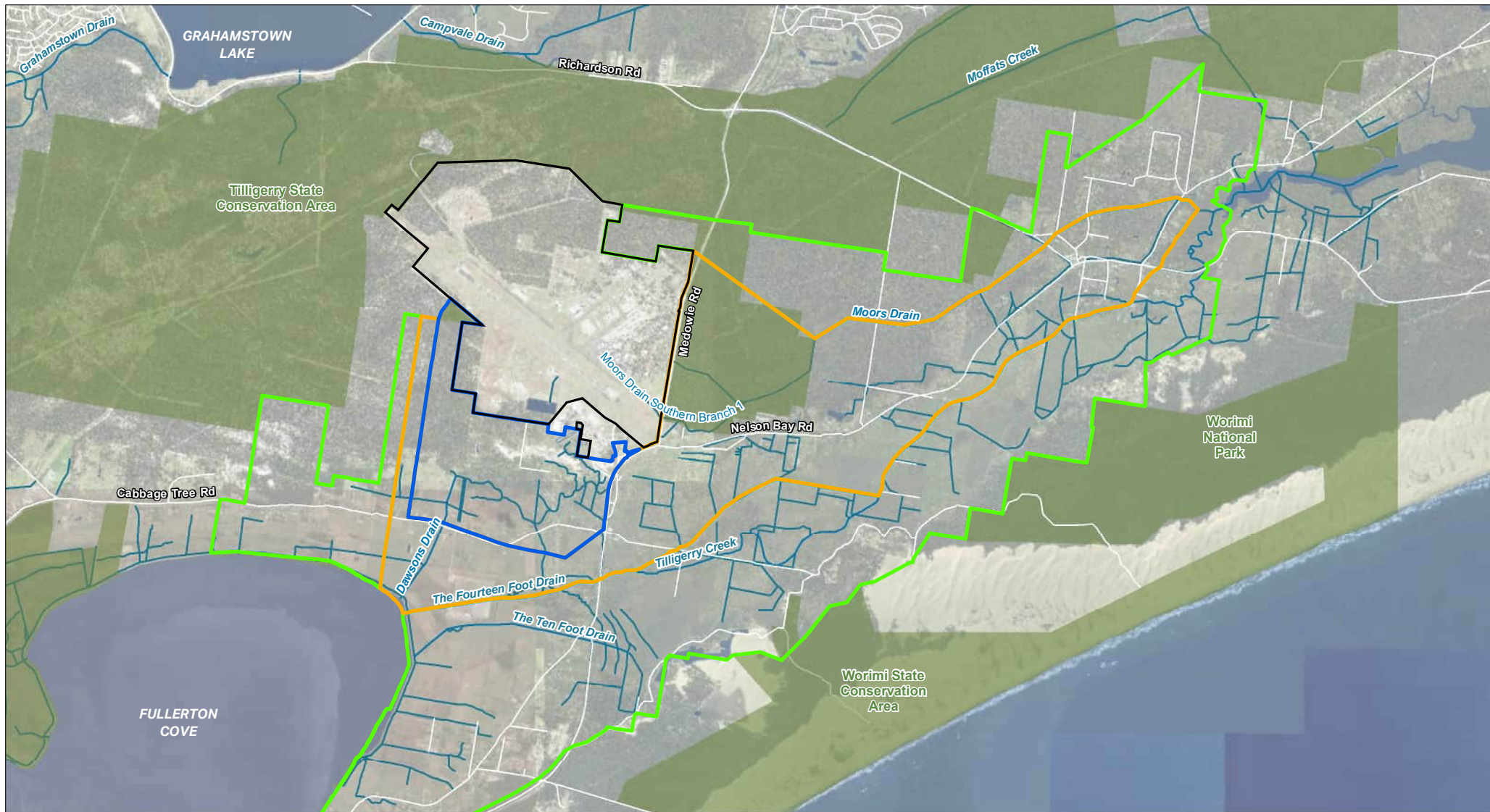


FIGURE F1: SITE LAYOUT

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- NPWS Reserve
- Waterway



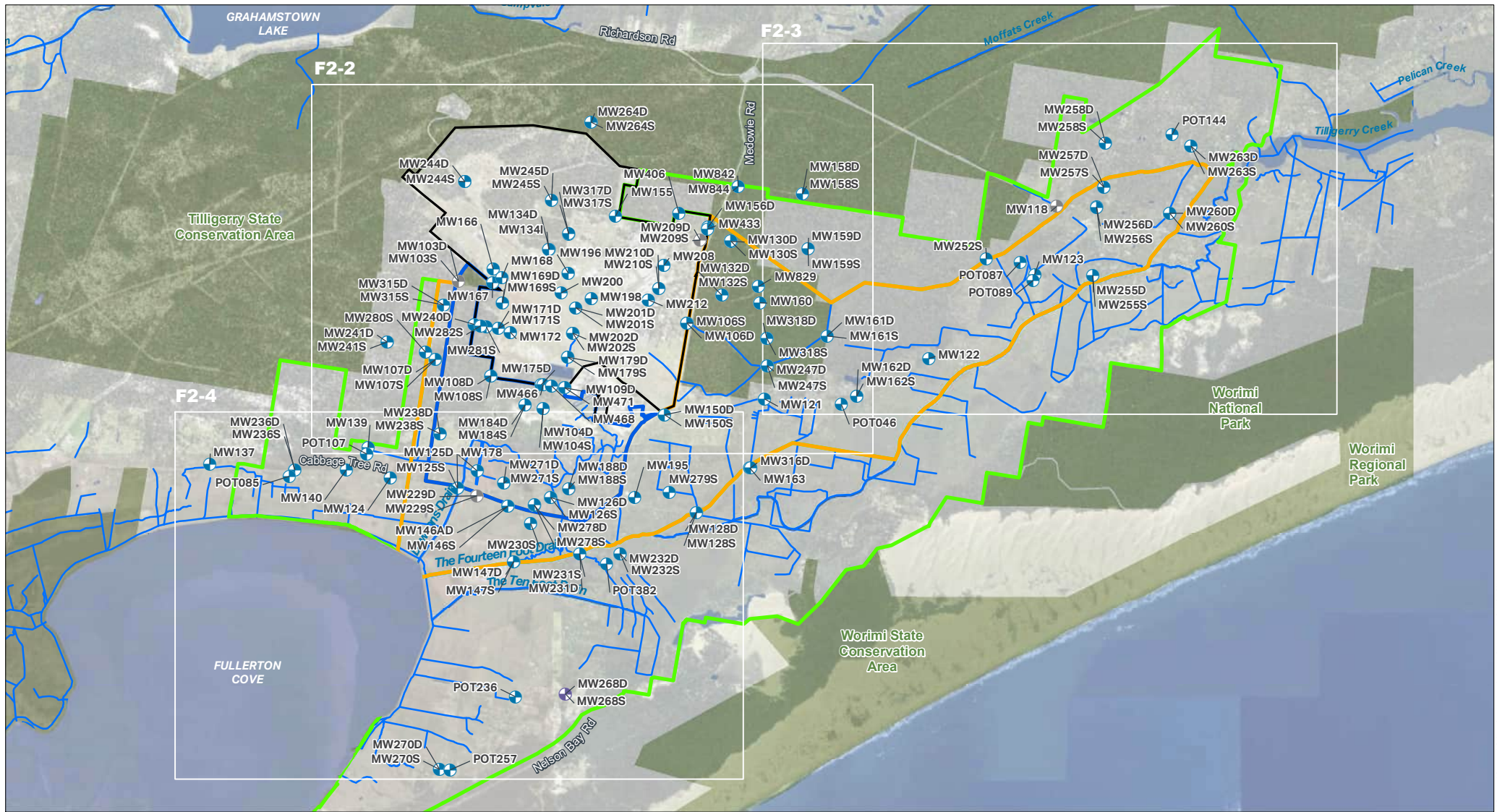
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 RAAF Base Williamtown (0908)  
 PROJECT NUMBER:  
 60612562  
 CLIENT  
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**FIGURE F2-1: GROUNDWATER SAMPLING LOCATIONS OVERVIEW**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Groundwater Location (sampled)
- ⊕ Groundwater Location (gauged)
- ⊗ Groundwater Location (not sampled)
- ~ Waterway



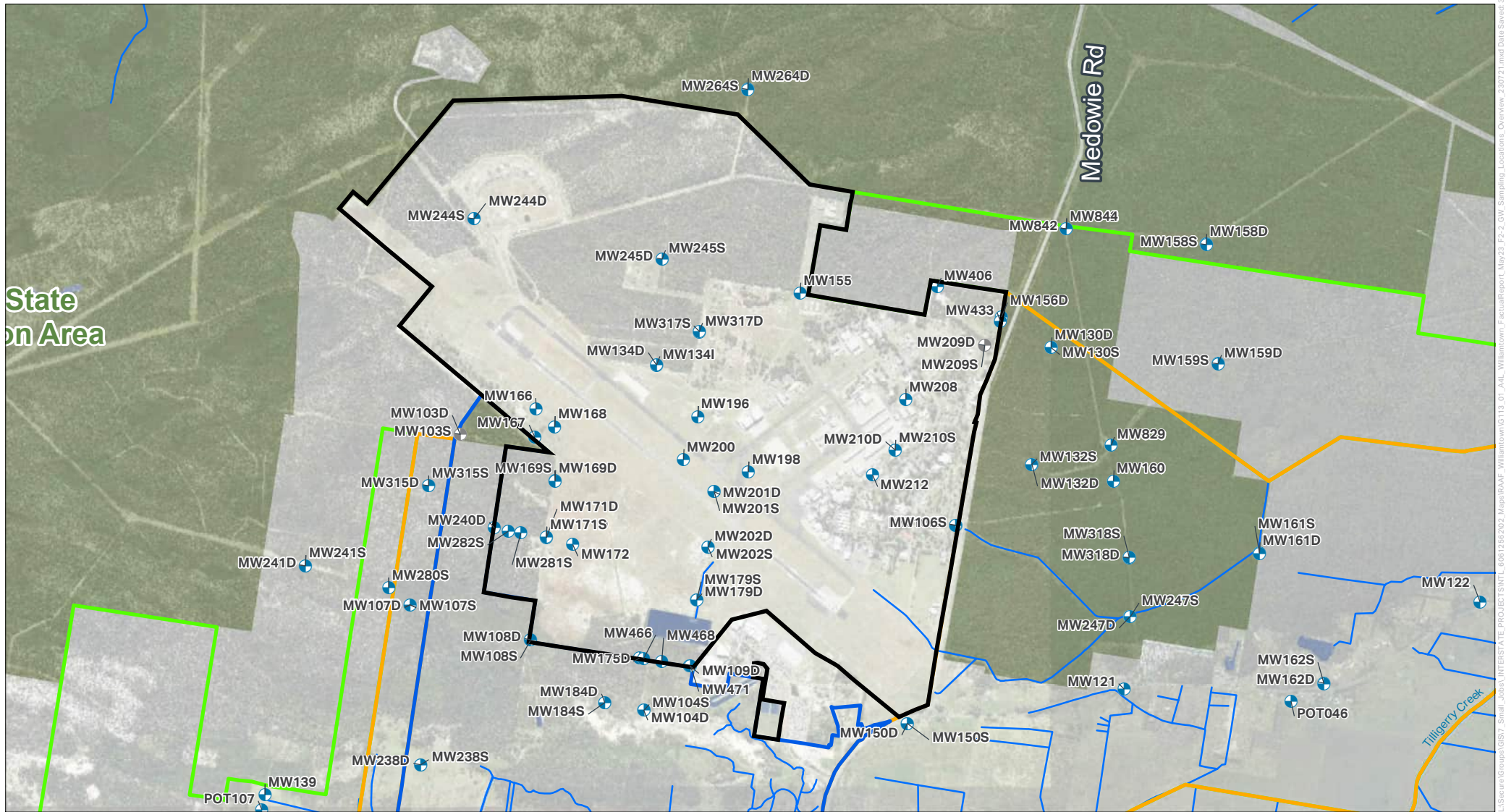
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**60612562**  
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**FIGURE F2-2: GROUNDWATER SAMPLING LOCATIONS - BASE AND WEST**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- + Groundwater Location (sampled)
- + Groundwater Location (gauged)
- + Groundwater Location (not sampled)
- ~ Waterway



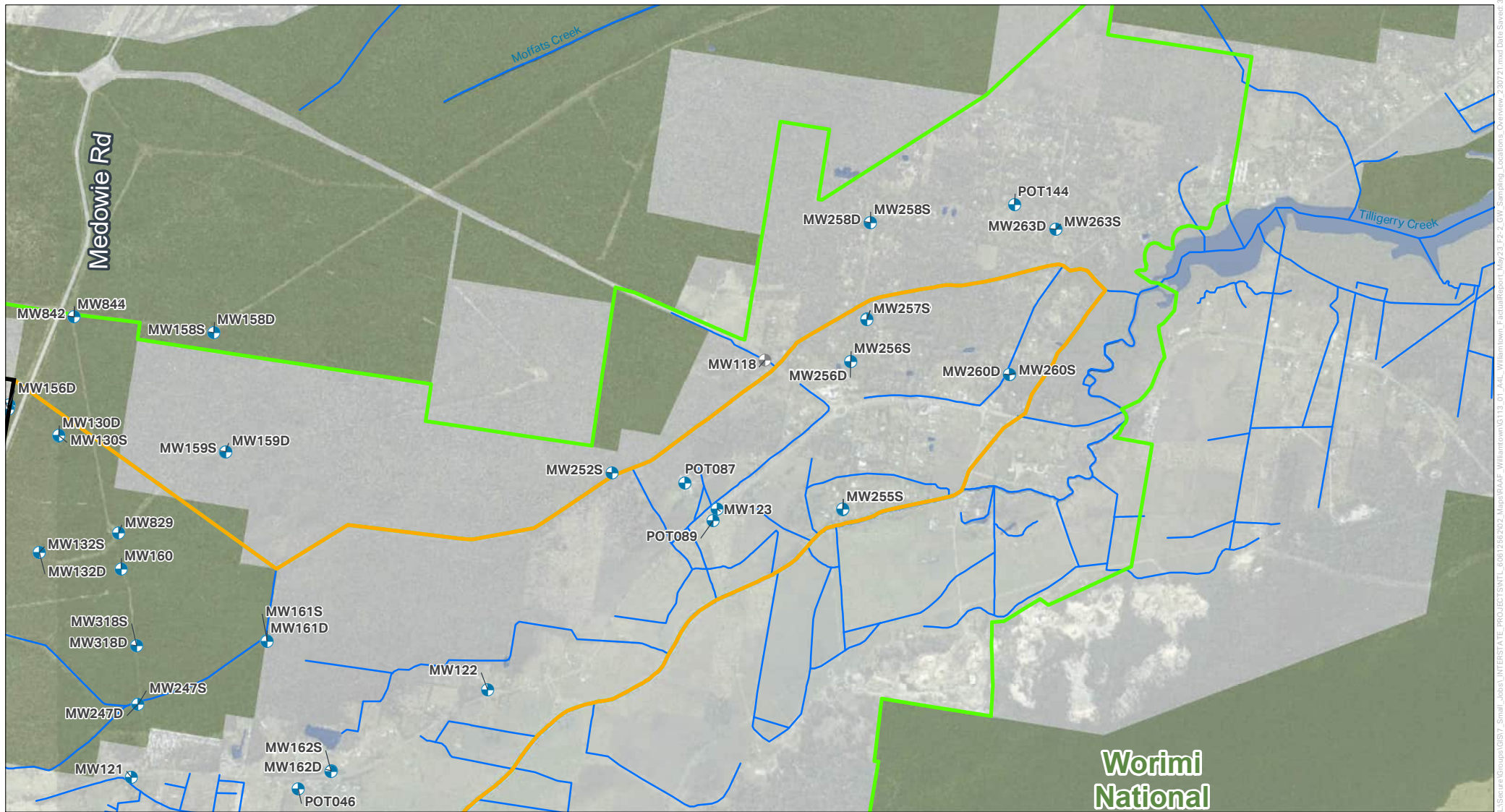
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**FIGURE F2-3: GROUNDWATER SAMPLING LOCATIONS - EAST**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- + Groundwater Location (sampled)
- + Groundwater Location (gauged)
- + Groundwater Location (not sampled)
- ~ Waterway



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
**Sampling Event Factual Report – May 2023**  
**RAAF Base Williamtown (0908)**  
 PROJECT NUMBER:  
**60612562**  
 CLIENT:  
**Department of Defence**

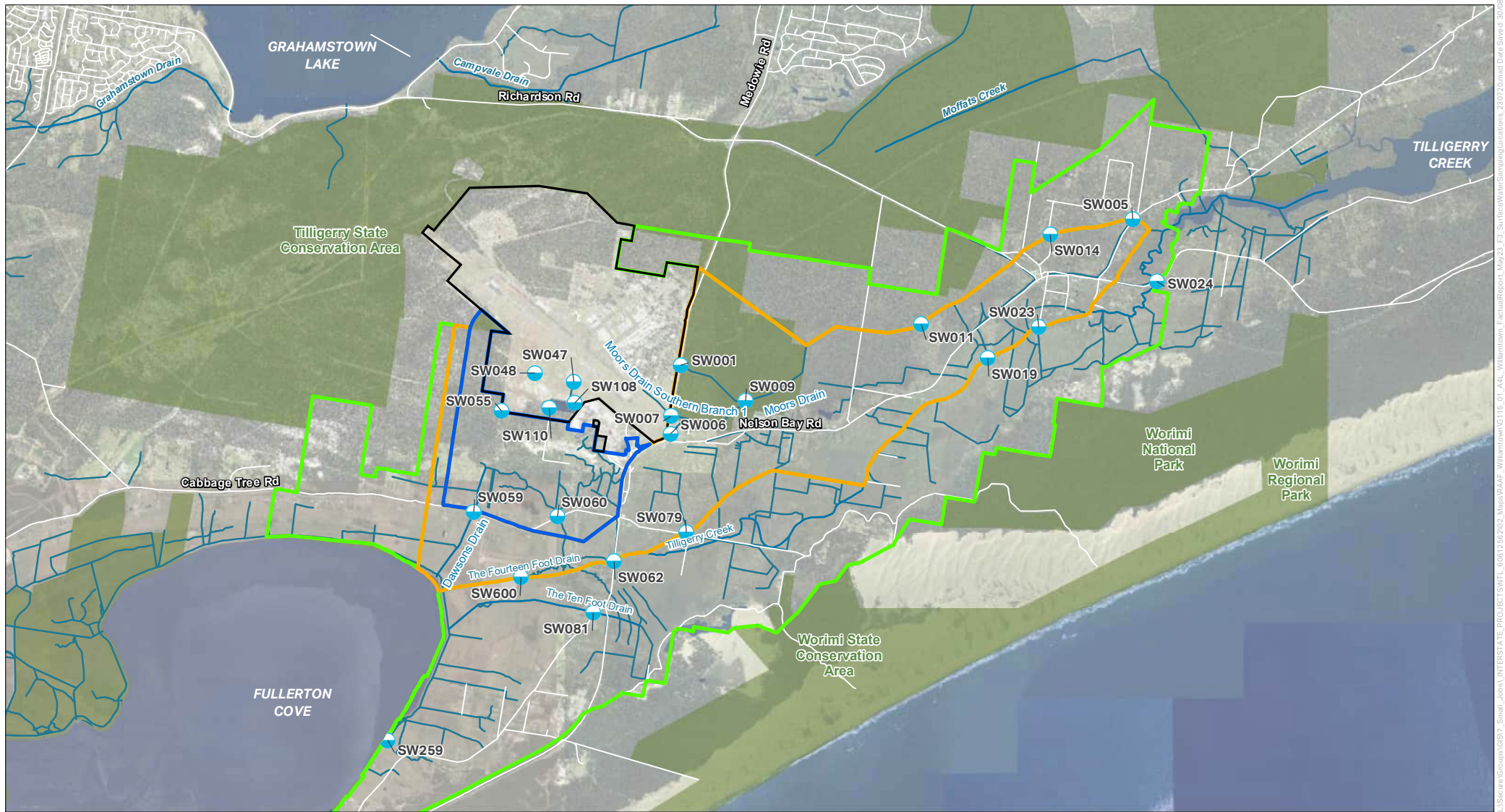
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**FIGURE F3: SURFACE WATER SAMPLING LOCATIONS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- Surface Water Location (sampled)

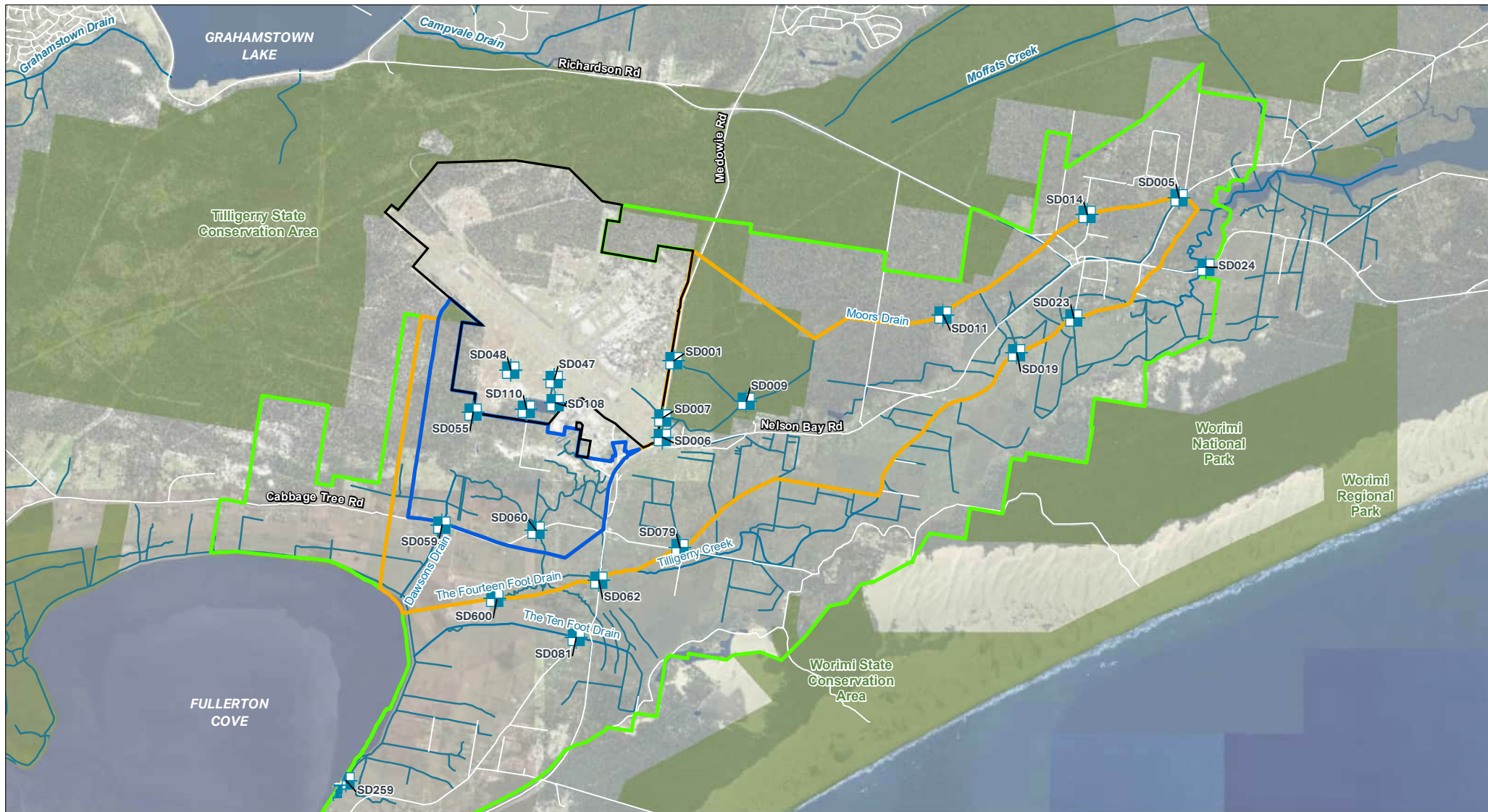


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**FIGURE F4: SEDIMENT SAMPLING LOCATIONS**

- Legend**
- RAAF Base Williamtown
  - Primary Management Zone
  - Secondary Management Zone
  - Broader Management Zone
  - Waterway
  - + Sediment Location (sampled)



PROJECT NAME:  
**PFAS OMP**  
 REPORT NAME:  
**Sampling Event Factual Report – May 2023**  
**RAAF Base Williamtown (0908)**  
 PROJECT NUMBER:  
**60612562**  
 CLIENT:  
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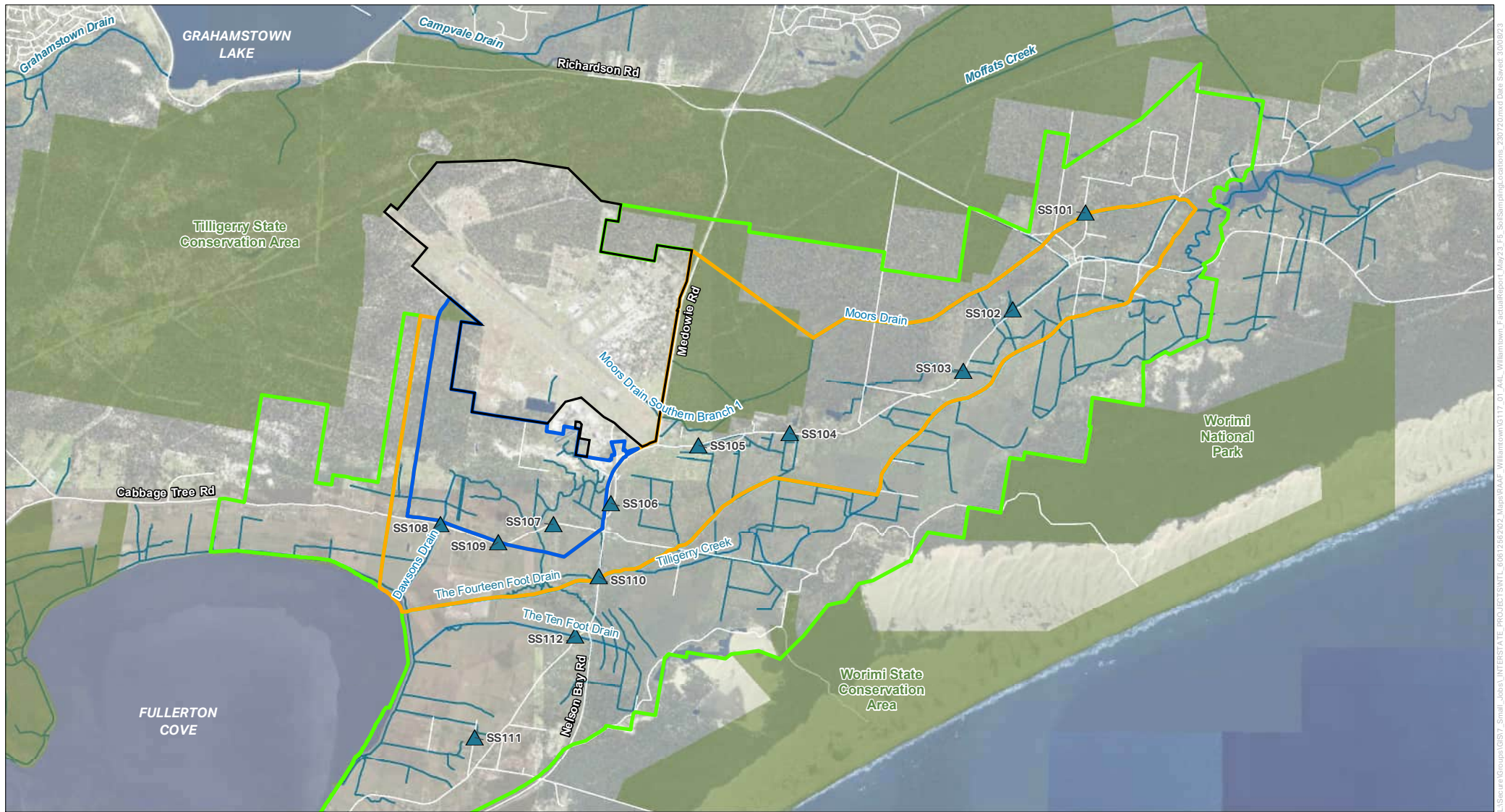


FIGURE F5: SOIL SAMPLING LOCATIONS

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- ~ Waterway
- ▲ Soil Location (sampled)



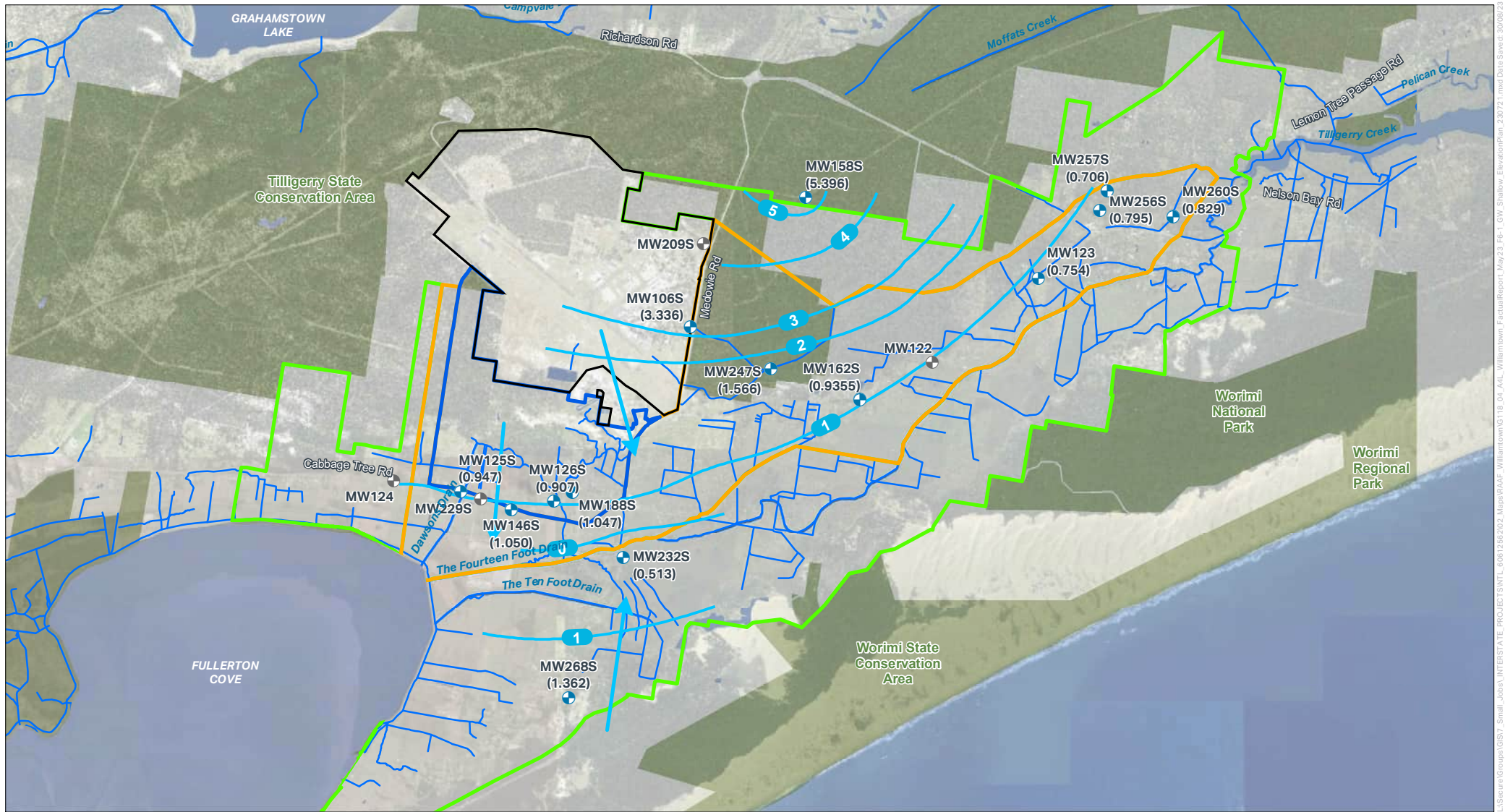
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RAAF Base Williamtown (0908)  
PROJECT NUMBER:  
60612562  
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**FIGURE F6-1: GROUNDWATER ELEVATION PLAN - SHALLOW**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- ➔ Inferred Groundwater Flow Direction
- Groundwater elevation Contour (Shallow Wells; mAHD)

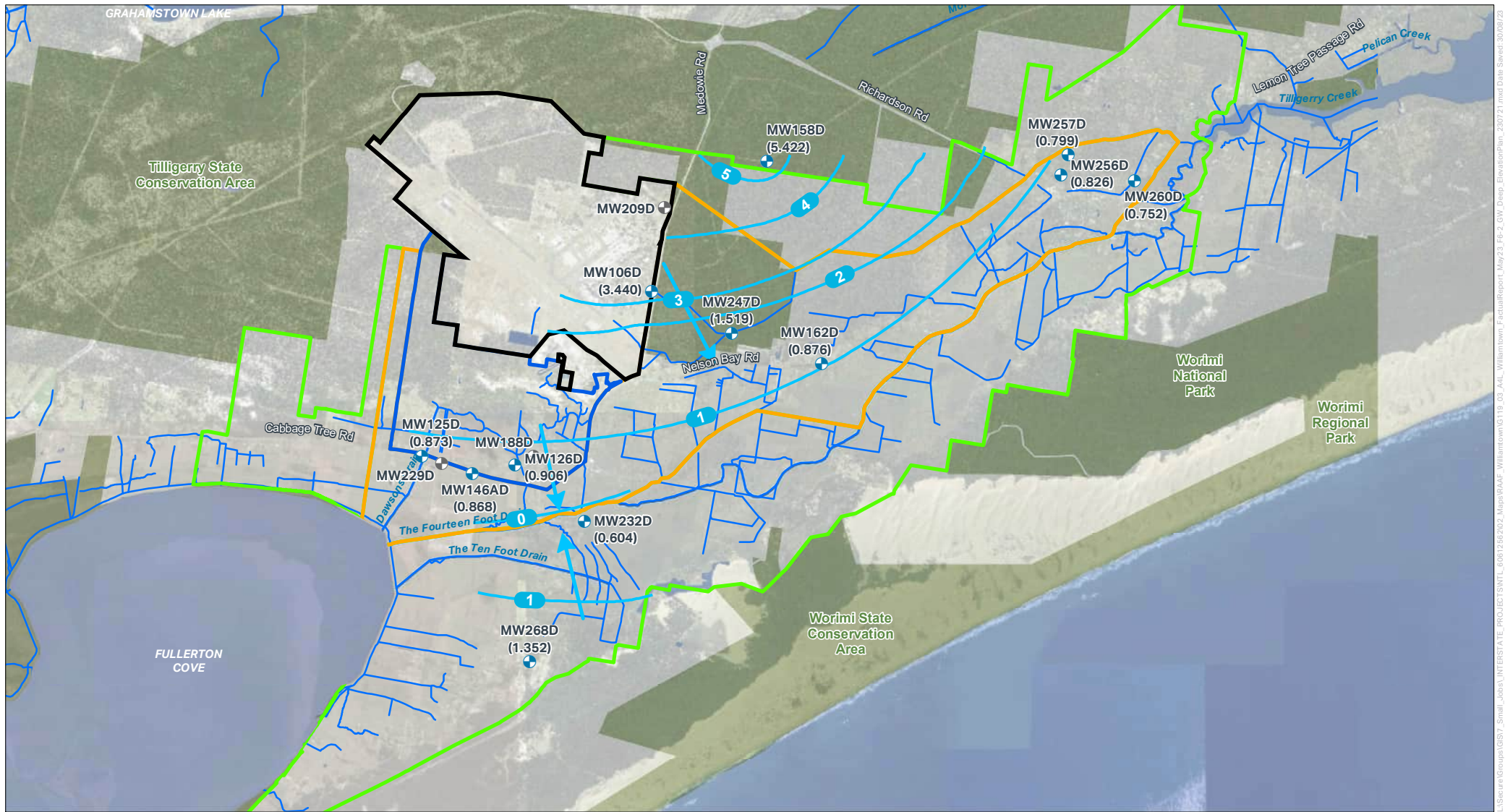


PROJECT NAME:  
 PFAS OMP  
 REPORT NAME:  
 Sampling Event Factual Report – May 2023  
 RAAF Base Williamtown (0908)  
 PROJECT NUMBER:  
 60612562  
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**FIGURE F6-2: GROUNDWATER ELEVATION PLAN - DEEP**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- + Groundwater Location (gauged)
- Inferred Groundwater Flow Direction
- Groundwater Elevation Contour (Deep Wells; mAHD)
- ~ Waterway



PROJECT NAME:  
 PFAS OMP  
 REPORT NAME:  
 Sampling Event Factual Report – May 2023  
 RAAF Base Williamtown (0908)  
 PROJECT NUMBER:  
 60612562  
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# Appendix B

Tables

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW103D	MW103_D	6.444	14.5	16	n/a	18/05/2023 11:15	n/a	n/a	n/a	Unable to access due to dense bushland and wet/overgrown tracks.
MW103S	MW103_S	6.572	2	5	n/a	18/05/2023 11:15	n/a	n/a	n/a	Unable to access due to dense bushland and wet/overgrown tracks.
MW104D	MW104_D	3.919	18.5	20	18.5	17/05/2023 8:50	1.772	2.147	20.50	Good condition. Ant nest in gatic.
MW104S	MW104_S	3.955	3.5	5	3.5	17/05/2023 8:25	1.809	2.146	4.69	Good condition. Ant nest in gatic.
MW106D	MW106_D	4.770	18.5	20	18.5	8/05/2023 13:09	1.330	3.440	19.55	Targeted gauging event visit + sampling. Good condition. Grass covering gatic.
MW106S	MW106_S	4.678	3.5	5	4.0	8/05/2023 12:43	1.342	3.336	4.49	Targeted gauging event visit + sampling. Good condition. HydraSleeve was lost down well, causing blockage. Unable to retrieve. Depth to blockage is 3.99 mbTOC. New HydraSleeve re-installed to 3.0m.
MW107D	MW107_D	3.362	18.5	20	18.5	12/05/2023 10:29	0.308	3.054	19.92	Good condition.
MW107S	MW107_S	3.322	2	5	3.3	12/05/2023 10:30	0.255	3.067	4.79	Good condition.
MW108D	MW108_D	3.080	18.5	20	18.5	10/05/2023 10:48	0.448	2.632	19.58	Good condition.
MW108S	MW108_S	2.950	2	5	2.8	10/05/2023 10:57	0.365	2.585	4.34	Good condition.
MW109D	MW109_D	3.157	18.5	20	18.0	26/05/2023 11:45	0.105	3.052	18.89	Good condition.
MW118	MW118	1.674	4.5	6	n/a	9/05/2023 8:21	0.820	0.854	n/a	Poor condition. Gatic box damaged by roadworks. Well blocked at 0.915m. Blockage in well likely caused by HydraSleeve (unable to retrieve).
MW121	MW121	1.589	4.5	6	4.5	9/05/2023 15:05	0.462	1.127	5.97	Good condition.
MW122	MW122	1.851	5.5	7	n/a	8/05/2023 11:39	n/a	n/a	n/a	Targeted gauging event visit. Unable to locate.
MW122	MW122	1.851	5.5	7	6.0	19/05/2023 8:21	0.869	0.982	6.96	Revisited location to locate well (previously unable to locate). Good condition.
MW123	MW123	1.524	4.5	6	n/a	8/05/2023 11:01	0.770	0.754	5.98	Targeted gauging event visit. Good condition.
MW123	MW123	1.524	4.5	6	5.0	9/05/2023 13:04	0.840	0.684	5.98	Good condition.
MW124	MW124	2.420	6	7.5	6.5	9/05/2023 14:50	1.080	1.340	7.39	Good condition.
MW125D	MW125_D	2.173	18.5	20	n/a	8/05/2023 13:16	1.300	0.873	20.26	Targeted gauging event visit. Good condition. Gatic covered by soil.
MW125D	MW125_D	2.173	18.5	20	19.0	9/05/2023 14:35	1.290	0.883	20.26	Good condition.
MW125S	MW125_S	2.197	6	7.5	n/a	8/05/2023 13:16	1.250	0.947	7.49	Targeted gauging event visit. Good condition. Gatic covered by soil.
MW125S	MW125_S	2.197	6	7.5	6.5	9/05/2023 14:32	1.330	0.867	7.49	Good condition.
MW126D	MW126_D	1.794	18.5	20	n/a	8/05/2023 12:09	0.888	0.906	20.46	Targeted gauging event visit. Good condition.
MW126D	MW126_D	1.794	18.5	20	19.0	11/05/2023 13:53	0.960	0.834	20.32	Good condition.
MW126S	MW126_S	1.790	5.5	7	n/a	8/05/2023 12:10	0.883	0.907	6.49	Targeted gauging event visit. Good condition.
MW126S	MW126_S	1.790	5.5	7	5.5	11/05/2023 13:45	0.950	0.840	6.47	Good condition.
MW128D	MW128_D	0.843	9.3	10.3	9.5	9/05/2023 11:40	0.222	0.621	10.45	Good condition. J-cap missing.
MW128S	MW128_S	0.909	4.7	6.2	5.0	9/05/2023 11:34	0.955	-0.046	6.17	Good condition.
MW130D	MW130_D	5.858	15	16.5	15.0	11/05/2023 13:50	0.755	5.103	16.47	Good condition.
MW130S	MW130_S	5.794	1	4	2.3	11/05/2023 13:53	0.795	4.999	3.84	Good condition.
MW132D	MW132_D	6.138	15	16.5	15.0	11/05/2023 11:55	2.685	3.453	16.18	Good condition.
MW132S	MW132_S	6.082	3	6	8.3	11/05/2023 12:03	2.665	3.417	9.79	Good condition.
MW134D	MW134_D	8.750	18.5	20	18.5	12/05/2023 8:36	2.068	6.682	19.98	Good condition.
MW134I	MW134_I	8.710	10	11.5	10.0	12/05/2023 8:47	2.018	6.692	11.48	Good condition.
MW137	MW137	2.820	0.5	3.5	2.5	18/05/2023 15:02	0.848	1.972	3.35	Good condition.
MW139	MW139	1.986	1	4	2.5	15/05/2023 15:16	0.428	1.558	3.93	Good condition.
MW140	MW140	2.270	0.6	3.6	2.0	18/05/2023 14:41	1.669	0.601	3.57	Good condition.
MW146AD	MW146D_A	1.620	18.5	20	n/a	8/05/2023 12:24	0.752	0.868	20.21	Targeted gauging event visit. Good condition.
MW146AD	MW146D_A	1.620	18.5	20	19.0	9/05/2023 14:05	0.790	0.830	20.20	Good condition.
MW146S	MW146_S	1.802	0.8	3.8	n/a	8/05/2023 12:25	0.752	1.050	3.78	Targeted gauging event visit. Good condition.
MW146S	MW146_S	1.802	0.8	3.8	2.8	9/05/2023 13:59	0.950	0.852	3.78	Good condition.
MW147D	MW147_D	0.810	23.7	26.7	24.0	15/05/2023 12:35	0.330	0.480	26.18	Good condition.
MW147S	MW147_S	0.710	1	4	2.5	15/05/2023 12:51	0.714	-0.004	4.21	Good condition.
MW150D	MW150_D	2.143	18.5	20	n/a	9/05/2023 9:14	0.732	1.411	20.27	HydraSleeve installation visit (well newly added to OMP). Good condition. Gatic box full of slimy sediment and roots. No HydraSleeve present. HydraSleeve installed at 18.5m.
MW150D	MW150_D	2.143	18.5	20	18.5	10/05/2023 15:11	0.720	1.423	20.27	Good condition.
MW150S	MW150_S	2.111	0.6	3.6	n/a	9/05/2023 9:18	0.604	1.507	3.63	HydraSleeve installation visit (well newly added to OMP). Good condition. No HydraSleeve present. HydraSleeve installed at 2.5m.
MW150S	MW150_S	2.111	0.6	3.6	2.5	10/05/2023 15:13	0.620	1.491	3.63	Good condition.
MW155	MW155, MW155D	7.960	1.5	3.8	2.0	8/05/2023 12:16	1.004	6.956	3.45	Good condition. Gatic lid damaged, replaced. Gatic flooded below TOC.
MW156D	MW156_D	7.340	19.5	21	19.5	8/05/2023 9:42	1.567	5.773	21.64	Good condition.
MW158D	MW158_D	6.193	18.5	20	n/a	8/05/2023 11:16	0.771	5.422	20.31	Targeted gauging event visit. Good condition.
MW158D	MW158_D	6.193	18.5	20	19.0	8/05/2023 15:00	0.780	5.413	20.31	Good condition.
MW158S	MW158_S	6.260	1	4	n/a	8/05/2023 11:17	0.864	5.396	3.86	Targeted gauging event visit. Good condition.
MW158S	MW158_S	6.260	1	4	2.8	8/05/2023 15:03	0.868	5.392	3.86	Good condition.
MW159D	MW159_D	5.260	18.5	20	19.7	11/05/2023 8:57	1.830	3.430	21.23	Good condition.
MW159S	MW159_S	4.987	1.47	4.47	3.0	11/05/2023 8:54	1.572	3.415	4.47	Good condition.
MW160	MW160	4.212	1	4	2.5	11/05/2023 11:19	1.438	2.774	4.05	Good condition.
MW161D	MW161_D	2.057	18.8	23.3	18.8	11/05/2023 14:33	0.700	1.357	20.27	Good condition.
MW161S	MW161_S	2.052	1	4	2.5	11/05/2023 14:33	0.690	1.362	4.04	Good condition.
MW162D	MW162_D	2.876	18.6	20.1	n/a	8/05/2023 11:30	2.000	0.876	20.17	Targeted gauging event visit. Good condition.
MW162D	MW162_D	2.876	18.6	20.1	19.0	9/05/2023 13:30	2.010	0.866	20.15	Good condition.
MW162S	MW162_S	2.838	1.5	4.5	n/a	8/05/2023 11:31	1.903	0.936	4.20	Targeted gauging event visit. Good condition.
MW162S	MW162_S	2.838	1.5	4.5	2.7	9/05/2023 13:22	1.920	0.918	4.21	Good condition.
MW163	MW163	1.207	0.5	3.5	2.5	9/05/2023 13:09	0.910	0.297	4.09	Good condition.
MW166	MW166	7.100	0.8	3.8	2.1	10/05/2023 14:06	1.070	6.030	3.67	Good condition.
MW167	MW167	7.190	0.7	3.7	2.8	10/05/2023 13:50	2.065	5.125	4.30	Good condition.
MW168	MW168	6.780	0.7	3.7	2.0	10/05/2023 14:23	1.180	5.600	3.44	Good condition.
MW169D	MW169_D	5.800	18	19.5	18.3	10/05/2023 13:33	0.775	5.025	19.31	Good condition.
MW169S	MW169_S	5.830	0.7	3.7	2.2	10/05/2023 13:33	0.795	5.035	3.71	Good condition.
MW171D	MW171_D	4.970	18.8	20.3	18.8	10/05/2023 11:35	0.555	4.415	20.28	Good condition.
MW171S	MW171_S	5.020	0.7	3.7	1.8	10/05/2023 11:35	0.620	4.400	3.36	Good condition.
MW172	MW172	4.880	0.7	3.7	1.8	10/05/2023 11:53	0.390	4.490	3.35	Good condition.
MW175D	MW175_D	4.110	19.5	21.5	20.0	10/05/2023 10:21	1.288	2.822	21.49	Good condition.
MW178	MW178	1.760	1.2	4.2	2.0	17/05/2023 15:02	0.667	1.093	4.23	Good condition.
MW179D	MW179_D	4.760	18.5	20	18.5	10/05/2023 14:53	0.945	3.815	19.53	Good condition.



Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW179S	MW179 S	4.710	0.8	3.8	2.0	10/05/2023 14:45	0.923	3.787	3.72	Good condition.
MW184D	MW184 D	3.073	18.5	20	18.5	17/05/2023 9:21	0.938	2.135	20.24	Good condition. Gatic lid cannot be secured due to J-cap height.
MW184S	MW184 S	3.106	1	4	2.0	17/05/2023 9:31	0.953	2.153	3.98	Good condition. Gatic lid damaged (broken into pieces).
MW188D	MW188 D	1.354	18.5	20	n/a	8/05/2023 12:00	n/a	n/a	n/a	Targeted gauging event visit. Unable to locate. Presumed buried in recent roadworks.
MW188S	MW188 S	1.439	0.8	3.8	n/a	8/05/2023 12:00	0.392	1.047	3.64	Targeted gauging event visit. Good condition. (Blockage from additional HydraSleeve found on subsequent visit).
MW188S	MW188 S	1.439	0.8	3.8	3.0	11/05/2023 11:03	0.820	0.619	4.54	Good condition. Found additional Hydrasleeve at base of well; removed.
MW195	MW195	1.050	0.8	3.8	2.0	9/05/2023 10:16	0.135	0.915	3.81	Good condition. No bolts.
MW196	MW196	6.760	0.8	3.8	2.0	10/05/2023 10:51	0.935	5.825	3.75	Good condition. HydraSleeve was stuck in well but able to be dislodged and retrieved.
MW198	MW198	6.110	0.8	3.8	2.0	10/05/2023 8:34	1.205	4.905	3.81	Gatic lid missing, J-cap secured.
MW200	MW200	6.470	1	4	2.0	10/05/2023 9:45	1.125	5.345	3.68	Good condition.
MW201D	MW201 D	5.810	18.1	19.6	18.3	10/05/2023 9:02	1.015	4.795	19.42	Good condition.
MW201S	MW201 S	5.800	1	4	2.0	10/05/2023 9:26	0.985	4.815	4.03	Good condition.
MW202D	MW202 D	5.170	19.5	21	19.5	10/05/2023 14:17	1.017	4.153	20.76	Good condition. No bolts.
MW202S	MW202 S	5.210	0.8	3.8	2.0	10/05/2023 14:23	1.070	4.140	3.69	Good condition. No bolts.
MW208	MW208	6.990	1.2	4.2	2.5	8/05/2023 11:11	2.032	4.958	4.10	Good condition. No bolts.
MW209D	MW209 D	6.530	18	19.5	n/a	8/05/2023 9:20	n/a	n/a	n/a	Targeted gauging event visit. Unable to access due to well located beneath stockpiled material.
MW209S	MW209 S	6.470	0.6	3.6	n/a	8/05/2023 9:20	n/a	n/a	n/a	Targeted gauging event visit. Unable to access due to well located beneath stockpiled material.
MW210D	MW210 D	7.350	18.5	20	18.5	8/05/2023 11:35	2.825	4.525	20.09	Good condition.
MW210S	MW210 S	7.220	2	5	2.0	8/05/2023 11:28	2.697	4.523	4.75	Good condition.
MW212	MW212	6.040	1.2	4.2	2.0	8/05/2023 11:56	1.673	4.367	4.12	Good condition. No bolts.
MW229D	MW229 D	1.920	18.5	20	n/a	8/05/2023 12:53	n/a	n/a	n/a	Targeted gauging event visit. Unable to locate.
MW229D	MW229 D	1.920	18.5	20	n/a	18/05/2023 15:27	n/a	n/a	n/a	Revisited to attempt locating. Unable to locate.
MW229S	MW229 S	1.910	1	4	n/a	8/05/2023 12:52	n/a	n/a	n/a	Targeted gauging event visit. Unable to locate.
MW230S	MW230 S	0.939	2.5	4	2.5	15/05/2023 13:23	0.205	0.734	4.01	Good condition.
MW231D	MW231 D	0.571	16	17.5	16.0	17/05/2023 12:48	0.000	0.571	17.59	Good condition. Gatic box full of water (above TOC). Water drained prior to removing J-cap.
MW231S	MW231 S	0.625	1	4	2.0	17/05/2023 12:42	0.185	0.440	4.01	Good condition.
MW232D	MW232 D	1.324	18.5	20	n/a	8/05/2023 14:17	0.720	0.604	21.05	Targeted gauging event visit. Good condition.
MW232D	MW232 D	1.324	18.5	20	20.0	11/05/2023 13:15	0.775	0.549	21.04	Good condition.
MW232S	MW232 S	1.148	1	4	n/a	8/05/2023 14:18	0.635	0.513	4.61	Targeted gauging event visit. Good condition.
MW232S	MW232 S	1.148	1	4	3.5	11/05/2023 13:21	0.663	0.485	4.60	Good condition.
MW236D	MW236 D	2.715	18.5	20	18.5	15/05/2023 10:09	1.045	1.670	20.25	Good condition. No bolts.
MW236S	MW236 S	2.707	1	4	2.0	15/05/2023 10:01	1.056	1.651	3.91	Good condition. No bolts.
MW238D	MW238 D	2.211	18.5	20	18.5	15/05/2023 11:50	0.769	1.442	20.25	Gatic lid broken. J-cap secured.
MW238S	MW238 S	2.270	1	4	2.0	15/05/2023 11:41	0.845	1.425	4.01	Good condition.
MW240D	MW240 D	5.742	18.5	20	19.0	10/05/2023 9:00	1.270	4.472	20.30	Good condition.
MW241D	MW241 D	5.449	18.5	20	18.7	12/05/2023 10:44	1.421	4.028	20.22	Good condition.
MW241S	MW241 S	5.559	1	4	2.0	12/05/2023 10:44	1.480	4.079	3.20	Good condition. J-cap not secured.
MW244D	MW244 D	9.457	18.5	20	18.5	10/05/2023 10:22	1.015	8.442	20.96	Good condition.
MW244S	MW244 S	9.603	1	4	2.0	10/05/2023 10:15	1.152	8.451	4.70	Good condition.
MW245D	MW245 D	9.311	18.5	20	18.5	10/05/2023 11:51	1.405	7.906	21.21	Good condition.
MW245S	MW245_S	9.292	1	4	1.5	10/05/2023 12:00	1.345	7.947	2.35	Good condition. HydraSleeve removed to gauge (as above DTW). HydraSleeve only 1/4 full. Well possibly blocked based on well construction depth.
MW247D	MW247 D	2.529	18.5	20	18.5	8/05/2023 14:45	1.010	1.519	20.36	Targeted gauging event visit + sampling. Good condition.
MW247S	MW247 S	2.468	1	4	2.0	8/05/2023 14:34	0.902	1.566	3.86	Targeted gauging event visit + sampling. Good condition.
MW252S	MW252 S	1.103	1	4	2.4	11/05/2023 10:32	0.000	1.103	3.94	Good condition. Gatic box full of water, above TOC. Water drained prior to removing J-cap.
MW255D	MW255 D	1.260	18.5	20	18.8	9/05/2023 10:21	0.870	0.390	20.26	Good condition.
MW255S	MW255 S	1.258	1	4	2.5	9/05/2023 10:32	0.985	0.273	3.97	Good condition.
MW256D	MW256 D	1.534	18.5	20	17.3	8/05/2023 9:43	0.708	0.826	18.80	Targeted gauging event visit + sampling. Good condition. Potential blockage.
MW256S	MW256 S	1.518	1	4	3.0	8/05/2023 10:05	0.723	0.795	4.00	Targeted gauging event visit + sampling. Good condition.
MW257D	MW257 D	1.819	18.5	20	18.6	8/05/2023 9:13	1.020	0.799	20.18	Targeted gauging event visit + sampling. Good condition.
MW257S	MW257 S	1.639	1	4	2.3	8/05/2023 9:21	0.933	0.706	3.83	Targeted gauging event visit + sampling. Good condition. Gatic full of sediment.
MW258D	MW258 D	2.903	18.5	20	18.6	9/05/2023 9:35	0.988	1.915	20.08	Good condition.
MW258S	MW258 S	2.916	1	4	2.4	9/05/2023 9:19	1.035	1.881	3.94	Good condition.
MW260D	MW260 D	2.080	18.5	20	18.8	8/05/2023 10:35	1.328	0.752	20.25	Targeted gauging event visit + sampling. Good condition.
MW260S	MW260 S	2.124	1	4	2.4	8/05/2023 10:25	1.295	0.829	3.91	Targeted gauging event visit + sampling. Good condition. Gatic lid damaged.
MW263D	MW263 D	1.314	18.5	20	18.8	9/05/2023 11:26	0.520	0.794	20.25	Good condition.
MW263S	MW263 S	1.328	1	4	3.0	9/05/2023 11:32	0.500	0.828	3.93	Good condition.
MW264D	MW264 D	9.347	18.5	20	18.5	12/05/2023 9:14	0.495	8.852	20.06	Good condition.
MW264S	MW264 S	9.492	1	4	1.7	12/05/2023 9:14	0.670	8.822	3.20	Good condition.
MW268D	MW268 D	3.362	18.5	20	n/a	8/05/2023 14:28	2.010	1.352	20.10	Targeted gauging event visit. Good condition.
MW268S	MW268 S	3.232	2	5	n/a	8/05/2023 14:35	1.870	1.362	5.01	Targeted gauging event visit. Good condition.
MW270D	MW270 D	1.412	18.5	20	18.5	16/05/2023 11:26	0.585	0.827	20.30	Good condition.
MW270D	MW270 D	1.412	18.5	20	18.5	9/08/2023 8:15	0.530	0.882	20.31	Good condition.
MW270S	MW270 S	1.411	2	4	2.0	16/05/2023 11:11	0.536	0.875	3.84	Good condition.
MW270S	MW270 S	1.411	2	4	2.0	9/08/2023 8:40	0.495	0.916	3.84	Good condition.
MW271D	MW271 D	1.308	18.5	20	18.5	15/05/2023 10:50	0.309	0.999	20.29	Good condition.
MW271S	MW271 S	1.316	1	4	2.0	15/05/2023 11:09	0.284	1.032	3.99	Good condition.
MW278D	MW278 D	1.289	18.5	20	18.5	11/05/2023 14:37	0.443	0.846	20.37	Good condition.
MW278S	MW278 S	1.253	1.5	3	1.5	11/05/2023 14:42	0.450	0.803	2.99	Good condition.
MW279S	MW279 S	1.295	0.8	3.8	2.0	9/05/2023 10:53	0.725	0.570	4.64	Good condition.
MW280S	MW280S_LT, MW280_S	3.831	1	4	n/a	12/05/2023 10:00	0.440	3.391	3.88	HydraSleeve installation visit. Good condition. No HydraSleeve on arrival. HydraSleeve installed at 2.3m.
MW280S	MW280S_LT, MW280_S	3.831	1	4	2.3	18/05/2023 9:05	0.186	3.645	3.89	Return visit as HydraSleeve was not present. Good condition. HydraSleeve re-installed at 2.3m.
MW281S	MW281 S	5.290	1	4	2.5	10/05/2023 9:21	0.945	4.345	3.99	Good condition.
MW282S	MW282 S	5.370	1	4	2.0	10/05/2023 9:09	0.870	4.500	3.52	Good condition.
MW315D	MW315 D/MW320D	6.160	18	20	18.5	18/05/2023 10:01	0.977	5.183	20.45	Good condition.
MW315S	MW315 S/MW320S	6.180	1	4	2.0	18/05/2023 9:45	1.004	5.176	3.78	Good condition.
MW316D	MW316 D/MW319D	1.200	18	20	18.0	9/05/2023 13:17	0.749	0.451	21.09	Good condition. Ants nest in PVC.
MW317D	MW317 D	7.960	18.5	20	18.5	12/05/2023 9:10	0.926	7.034	20.67	Good condition.
MW317S	MW317 S	7.970	1	4	2.0	12/05/2023 9:23	0.945	7.025	4.10	Good condition.

Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW318D	MW318 D	2.630	18.5	20	18.8	11/05/2023 11:02	0.730	1.900	20.29	Good condition.
MW318S	MW318 S	2.670	1	4	2.4	11/05/2023 11:02	0.990	1.680	3.89	Good condition.
MW406	W6	8.270	unknown	unknown	2.0	8/05/2023 10:43	1.672	6.598	2.86	Good condition.
MW433	W33	6.926	unknown	unknown	n/a	8/05/2023 10:11	1.423	5.503	n/a	Poor condition. Monument laying on grass beside PVC stick up. No J-cap, duct tape around edge of PVC securing HydraSleeve string. HydraSleeve likely causing blockage in well - blocked to 2.810 mbTOC. Unable to remove HydraSleeve.
MW433	W33	6.926	unknown	unknown	n/a	9/05/2023 14:03	1.513	5.413	n/a	Return visit due to HydraSleeve blockage. Poor condition. Monument laying on grass beside PVC stick up. Monument was placed back on well after sampling with bailer. Well blocked to 2.810 mbTOC.
MW466	W66	4.320	unknown	unknown	2.0	10/05/2023 10:12	1.710	2.610	3.22	Good condition.
MW468	W68	4.020	unknown	unknown	2.5	10/05/2023 10:01	1.285	2.735	4.04	Good condition.
MW471	W71	4.074	1	4	2.0	10/05/2023 9:52	1.100	2.974	3.40	Good condition.
MW829	PS9 BORE 30, MW652	n/a	n/a	n/a	n/a	11/05/2023 13:13	n/a	n/a	11.97	Good condition (not traditional well, PVC stick up with cap, not gauged).
MW842	SK3496 D	unknown	unknown	unknown	n/a	18/05/2023 13:23	1.198	n/a	18.03	Good condition. Narrow PVC pipe, HydraSleeves cannot be installed.
MW844	SK3496 S	unknown	unknown	unknown	n/a	18/05/2023 13:00	1.133	n/a	6.00	Good condition. Narrow PVC pipe, HydraSleeves cannot be installed.
POT046	BWS046	n/a	n/a	n/a	n/a	16/05/2023 14:20	n/a	n/a	n/a	Residential bore tap
POT085	BWS085	n/a	n/a	n/a	n/a	15/05/2023 14:38	n/a	n/a	n/a	Residential bore tap
POT087	BWS087	n/a	n/a	n/a	n/a	17/05/2023 11:05	n/a	n/a	n/a	Residential bore tap
POT089	BWS089	n/a	n/a	n/a	n/a	17/05/2023 11:15	n/a	n/a	n/a	Residential bore tap
POT107	BWS107	n/a	n/a	n/a	n/a	15/05/2023 15:28	n/a	n/a	n/a	Residential bore tap
POT144	BWS144	n/a	n/a	n/a	n/a	17/05/2023 10:20	n/a	n/a	n/a	Residential bore tap
POT236	BWS236	n/a	n/a	n/a	n/a	16/05/2023 12:50	n/a	n/a	n/a	Residential bore tap
POT257	BWS257	n/a	n/a	n/a	n/a	16/05/2023 12:07	n/a	n/a	n/a	Residential bore tap
POT382		n/a	n/a	n/a	n/a	17/05/2023 13:43	n/a	n/a	n/a	Residential bore tap

**Notes**  
mbTOC meters below Top of Casing  
mAHD meters Australian Height Datum  
n/a Not applicable  
- Not measured

Table T2 - Groundwater Quality Parameters and Observations

Location Code	Sampled Date Time	Sample Comment	Water Quality Parameters					
			Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
			mg/L	°C	µS/cm	pH Units	mV	mV
MW103D	n/a	Unable to access due to dense bushland and wet/overgrown tracks.	n/a	n/a	n/a	n/a	n/a	n/a
MW103S	n/a	Unable to access due to dense bushland and wet/overgrown tracks.	n/a	n/a	n/a	n/a	n/a	n/a
MW104D	17/05/2023 8:50	Brown/orange, no turbidity, organic odour, no sheen.	1.36	16.7	159.0	5.37	-12.9	192.9
MW104S	17/05/2023 8:27	Light yellow, low turbidity, sulfurous odour, no sheen.	1.98	17.8	202.1	5.09	-26.8	179.0
MW106D	8/05/2023 13:10	Light yellow, low turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve.	0.99	19.9	150.2	5.08	-4.7	201.1
MW106S	8/05/2023 12:43	Clear, no turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.28	19.4	117.6	5.25	155.1	360.9
MW107D	12/05/2023 10:30	Clear, low turbidity, no odour, no sheen.	0.85	18.0	118.1	5.20	15.1	220.9
MW107S	12/05/2023 10:30	Clear, medium turbidity, no odour, no sheen.	2.08	17.8	116.1	5.26	23.4	229.2
MW108D	10/05/2023 10:52	Light brown, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	4.67	18.4	189.0	5.97	16.0	221.8
MW108S	10/05/2023 10:59	Clear, no turbidity, no odour, no sheen.	1.93	18.8	78.1	4.79	93.8	299.6
MW109D	26/05/2023 11:45	Yellow, low turbidity, organic odour, no sheen. Organic matter and sediment at base of HydraSleeve.	2.59	19.6	148.2	6.75	32.0	237.8
MW118	n/a	Unable to sample due to well damage and blockage in well above screen.	n/a	n/a	n/a	n/a	n/a	n/a
MW121	9/05/2023 15:10	Clear, no turbidity, no odour, no sheen.	2.10	20.6	326.2	6.05	18.4	224.2
MW122	19/05/2023 8:22	Brown, medium turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve.	1.81	16.9	405.6	5.77	-18.5	187.3
MW123	9/05/2023 13:10	Light yellow, low turbidity, no odour, no sheen.	1.22	20.8	1,328.0	6.30	32.8	238.6
MW124	9/05/2023 14:54	Light yellow, medium turbidity, no odour, no sheen.	0.96	19.9	109.8	5.35	10.0	215.8
MW125D	9/05/2023 14:39	Light brown, medium turbidity, no odour, no sheen.	1.17	19.0	1,103.0	5.75	0.6	206.4
MW125S	9/05/2023 14:34	Light brown, low turbidity, no odour, no sheen.	1.46	20.6	468.3	5.59	64.0	269.8
MW126D	11/05/2023 13:54	Brown/orange, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve. Suspended organic matter.	1.49	20.3	252.3	6.24	4.0	209.8
MW126S	11/05/2023 13:45	Light brown, low turbidity, no odour, no sheen. Suspended particulates.	1.15	21.7	203.1	6.43	0.5	206.3
MW128D	9/05/2023 11:45	Light yellow, low turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve.	1.22	18.3	1,572.0	7.79	-155.7	50.1
MW128S	9/05/2023 11:34	Clear, low turbidity, sulfurous odour, no sheen.	1.54	18.3	7,357.0	7.36	-106.2	99.6
MW130D	11/05/2023 13:50	Clear, medium turbidity, sulfurous odour, no sheen.	1.38	18.1	117.2	4.62	-16.6	189.2
MW130S	11/05/2023 13:53	Brown, high turbidity, sulfurous odour, no sheen.	0.69	17.5	103.8	3.98	8.7	214.5
MW132D	11/05/2023 11:56	Yellow, high turbidity, sulfurous odour, no sheen.	0.66	20.2	198.5	5.19	-67.1	138.7
MW132S	11/05/2023 12:04	Light yellow, medium turbidity, sulfurous odour, no sheen.	0.55	19.6	135.6	4.62	-17.6	188.2
MW134D	12/05/2023 8:36	Clear, no turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.19	16.9	164.9	4.73	215.0	420.8
MW134I	12/05/2023 8:48	Clear, no turbidity, no odour, no sheen.	0.77	18.3	156.9	4.37	13.0	218.8
MW137	18/05/2023 15:04	Yellow, low turbidity, sulfurous odour, no sheen.	2.06	17.7	303.5	4.93	-35.4	170.4
MW139	15/05/2023 15:20	Light yellow, no turbidity, sulfurous odour, no sheen.	0.99	20.4	312.8	5.01	42.9	248.7
MW140	18/05/2023 14:44	Brown, low turbidity, sulfurous odour, no sheen.	1.48	19.0	187.3	4.79	-3.1	202.7
MW146AD	9/05/2023 14:08	Light yellow, low turbidity, no odour, no sheen.	0.94	19.1	399.3	5.91	38.6	244.4
MW146S	9/05/2023 14:00	Light brown, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.28	19.9	463.1	5.79	144.8	350.6
MW147D	15/05/2023 12:35	Black/grey, high turbidity, no odour, no sheen.	1.05	19.9	31,629.0	6.20	-3.8	202.0
MW147S	15/05/2023 12:53	Black/grey, high turbidity, no odour, no sheen.	1.31	20.5	14,542.0	6.61	-99.8	106.0
MW150D	10/05/2023 15:13	Light yellow, medium turbidity, no odour, no sheen.	1.21	18.6	144.9	5.48	90.9	296.7
MW150S	10/05/2023 15:13	Light yellow, low turbidity, no odour, no sheen.	2.12	19.3	404.0	5.95	96.1	301.9
MW155	8/05/2023 12:17	Light yellow, low turbidity, no odour, no sheen.	0.88	21.1	217.0	5.60	112.8	318.6
MW156D	8/05/2023 9:45	Clear, no turbidity, no odour, no sheen.	2.76	17.1	331.1	5.87	59.6	265.4
MW158D	8/05/2023 15:00	Clear, no turbidity, no odour, no sheen.	2.28	19.1	124.0	5.64	-8.7	197.1
MW158S	8/05/2023 15:04	Brown, medium turbidity, organic odour, no sheen.	1.69	19.3	139.5	4.94	87.7	293.5
MW159D	11/05/2023 8:58	Light brown, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	0.21	16.2	139.2	6.78	-86.2	119.6
MW159S	11/05/2023 8:57	Dark brown, high turbidity, organic odour, no sheen. Sediment at base of HydraSleeve.	1.24	18.5	193.4	5.08	88.2	294.0
MW160	11/05/2023 11:20	Light yellow, medium turbidity, sulfurous odour, no sheen. Suspended organic matter.	1.16	19.0	137.5	4.52	-31.8	174.0
MW161D	11/05/2023 14:34	Clear, low turbidity, no odour, no sheen.	1.38	19.1	160.5	5.83	-0.6	205.2
MW161S	11/05/2023 14:34	Light yellow, medium turbidity, septic odour, no sheen.	0.73	20.5	166.8	4.69	-33.0	172.8
MW162D	9/05/2023 13:34	Light brown, low turbidity, no odour, no sheen.	1.14	19.4	128.0	5.41	157.3	363.1
MW162S	9/05/2023 13:28	Clear, low turbidity, no odour, no sheen.	3.90	20.1	109.2	5.66	116.4	322.2
MW163	9/05/2023 13:11	Clear, no turbidity, sulfurous odour, no sheen. Dead ants in HydraSleeve.	1.03	14.9	19.2	6.01	-6.1	199.7
MW166	10/05/2023 14:06	Light yellow, low turbidity, septic odour, no sheen.	1.32	19.1	273.5	5.62	48.4	254.2
MW167	10/05/2023 13:50	Brown, high turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	2.37	20.3	100.3	4.32	199.5	405.3
MW168	10/05/2023 14:23	Yellow, medium turbidity, organic odour, no sheen. Sediment at base of HydraSleeve.	3.81	19.8	82.7	5.48	55.0	260.8
MW169D	10/05/2023 13:34	Clear, low turbidity, no odour, no sheen.	1.13	20.0	165.1	5.60	149.0	354.8
MW169S	10/05/2023 13:34	Light yellow, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	3.20	21.1	102.5	4.85	202.1	407.9
MW171D	10/05/2023 11:36	Grey, medium turbidity, organic odour, no sheen.	0.81	18.7	193.5	5.97	-9.4	196.4
MW171S	10/05/2023 11:36	Yellow, low turbidity, no odour, no sheen.	2.11	19.2	93.2	4.42	254.3	460.1
MW172	10/05/2023 11:54	Light Yellow, medium turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve.	3.35	19.9	251.6	5.71	-92.8	113.0
MW175D	10/05/2023 10:22	Clear, no turbidity, organic odour, no sheen. Sediment at base of HydraSleeve.	2.22	19.4	217.6	5.99	-7.1	198.7
MW178	17/05/2023 15:02	Light brown, low turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve.	1.36	17.5	573.4	5.70	-29.8	176.0
MW179D	10/05/2023 14:56	Clear, no turbidity, sulfurous odour, no sheen.	1.20	19.9	142.1	5.70	-21.2	184.6
MW179S	10/05/2023 14:48	Brown, medium turbidity, no odour, no sheen.	0.97	20.6	95.4	4.65	50.7	256.5
MW184D	17/05/2023 9:21	Light yellow, no turbidity, no odour, no sheen.	1.27	16.6	98.4	5.69	57.7	263.5

Table T2 - Groundwater Quality Parameters and Observations

Location Code	Sampled Date Time	Sample Comment	Water Quality Parameters					
			Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW184S	17/05/2023 9:32	Yellow/brown, low turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve.	2.21	17.1	161.8	5.46	-98.9	106.9
MW188D	n/a	Unable to locate. Presumed buried in recent roadworks.	n/a	n/a	n/a	n/a	n/a	n/a
MW188S	11/05/2023 11:05	Light brown, no turbidity, no odour, no sheen.	1.50	22.8	117.9	6.54	151.4	357.2
MW195	9/05/2023 10:19	Clear, low turbidity, organic odour, no sheen. Organic matter at base of HydraSleeve. Suspended organic matter.	0.91	18.1	838.0	6.78	-66.4	139.4
MW196	10/05/2023 11:03	Light brown, low turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.47	20.9	68.9	4.78	241.3	447.1
MW198	10/05/2023 8:35	Brown, medium turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.78	18.2	185.0	5.48	183.3	389.1
MW200	10/05/2023 9:45	Light brown, low turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.27	19.4	60.4	4.31	195.4	401.2
MW201D	10/05/2023 9:06	Brown, low turbidity, no odour, no sheen.	1.94	18.2	100.3	5.88	37.3	243.1
MW201S	10/05/2023 9:27	Light yellow, low turbidity, no odour, no sheen.	2.15	17.7	81.9	4.51	255.7	461.5
MW202D	10/05/2023 14:20	Dark grey, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.49	19.8	168.5	5.99	17.2	223.0
MW202S	10/05/2023 14:26	Grey/brown, high turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.87	20.9	122.8	5.71	98.3	304.1
MW208	8/05/2023 11:14	Light yellow, no turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	2.18	20.6	151.7	4.91	210.5	416.3
MW209D	n/a	Unable to access due to well located beneath stockpiled material.	n/a	n/a	n/a	n/a	n/a	n/a
MW209S	n/a	Unable to access due to well located beneath stockpiled material.	n/a	n/a	n/a	n/a	n/a	n/a
MW210D	8/05/2023 11:39	Grey, medium turbidity, sulfurous odour, no sheen.	1.31	22.3	71.6	5.36	41.9	247.7
MW210S	8/05/2023 11:29	Light brown, low turbidity, sulfurous odour, no sheen.	0.76	22.6	137.2	4.87	-24.9	180.9
MW212	8/05/2023 11:58	Dark brown, high turbidity, no odour, no sheen.	2.11	21.4	147.6	5.86	107.0	312.8
MW229D	n/a	Unable to locate.	n/a	n/a	n/a	n/a	n/a	n/a
MW229S	n/a	Unable to locate.	n/a	n/a	n/a	n/a	n/a	n/a
MW230S	15/05/2023 13:29	Light grey, low turbidity, no odour, no sheen.	1.06	22.4	477.0	6.01	9.4	215.2
MW231D	17/05/2023 12:53	Grey, medium turbidity, sulfurous odour, no sheen.	1.88	18.4	16,934.2	6.95	-193.2	12.6
MW231S	17/05/2023 12:43	Clear, low turbidity, no odour, no sheen. Suspended particulates.	1.19	18.6	18,965.0	6.73	-73.0	132.8
MW232D	11/05/2023 13:17	Light brown, medium turbidity, organic odour, no sheen.	2.73	20.0	14,662.0	6.64	90.8	296.6
MW232S	11/05/2023 13:21	Light grey, low turbidity, no odour, no sheen. Organic matter at base of HydraSleeve. Suspended particulates.	1.78	19.4	198.8	7.19	-22.5	183.3
MW236D	15/05/2023 10:10	Light yellow, low turbidity, sulfurous odour, no sheen. Suspended organic matter (white).	1.13	18.9	163.4	5.48	-99.4	106.4
MW236S	15/05/2023 10:03	Yellow, low turbidity, sulfurous odour, no sheen. Suspended organic matter (white, slimy lumps).	0.46	18.9	530.6	4.80	-63.5	142.3
MW238D	15/05/2023 11:51	Light grey, low turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.59	19.8	197.4	6.08	-16.5	189.3
MW238S	15/05/2023 11:43	Grey/brown, high turbidity, no odour, no sheen.	0.95	19.6	141.8	5.45	26.2	232.0
MW240D	10/05/2023 9:00	Clear, low turbidity, sulfurous odour, no sheen.	2.73	17.3	75.9	4.32	76.6	282.4
MW241D	12/05/2023 10:46	Light brown, medium turbidity, organic odour, no sheen.	0.91	19.2	182.2	5.96	-10.6	195.2
MW241S	12/05/2023 10:46	Light yellow, medium turbidity, organic odour, no sheen. Dead lizard in HydraSleeve.	2.71	21.4	153.8	6.09	-64.9	140.9
MW244D	10/05/2023 10:23	Light yellow, low turbidity, sulfurous odour, no sheen.	1.94	20.3	204.3	5.95	-31.0	174.8
MW244S	10/05/2023 10:17	Light yellow, no turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve.	0.89	20.4	97.8	4.73	3.8	209.6
MW245D	10/05/2023 11:53	Light yellow, low turbidity, organic odour, no sheen. Organic matter and sediment at base of HydraSleeve.	1.79	18.9	135.2	4.98	157.9	363.7
MW245S	10/05/2023 12:02	Yellow, medium turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.33	16.8	90.1	4.56	209.2	415.0
MW247D	8/05/2023 14:47	Light yellow, no turbidity, no odour, no sheen.	1.01	18.7	121.1	5.29	83.9	289.7
MW247S	8/05/2023 14:37	Light brown, low turbidity, sulfurous odour, no sheen.	1.55	20.3	163.0	4.68	-4.2	201.6
MW252S	11/05/2023 10:33	Brown, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	2.71	19.0	307.6	6.24	135.7	341.5
MW255D	9/05/2023 10:28	Clear, low turbidity, no odour, no sheen.	1.88	19.7	6.3	6.34	-81.8	124.0
MW255S	9/05/2023 10:36	Dark brown, high turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	0.45	21.9	634.0	6.16	-47.2	158.6
MW256D	8/05/2023 9:43	Brown, high turbidity, no odour, no sheen.	2.35	16.0	520.7	6.30	-135.0	70.8
MW256S	8/05/2023 10:05	Brown, high turbidity, no odour, no sheen.	1.28	17.0	191.7	5.13	-52.0	153.8
MW257D	8/05/2023 9:13	Clear, low turbidity, no odour, no sheen.	2.13	15.9	565.0	5.55	-83.0	122.8
MW257S	8/05/2023 9:21	Brown, medium turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.59	16.6	109.0	5.44	-48.3	157.5
MW258D	9/05/2023 9:35	Yellow, medium turbidity, organic odour, no sheen.	1.98	18.3	343.1	6.62	-70.2	135.6
MW258S	9/05/2023 9:21	Dark brown, high turbidity, organic odour, no sheen.	2.03	18.4	120.8	4.41	-2.5	203.3
MW260D	8/05/2023 10:35	Clear, no turbidity, no odour, no sheen.	1.26	19.4	25,255.0	5.76	-11.2	194.6
MW260S	8/05/2023 10:26	Dark brown, high turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.43	20.0	8,254.0	6.57	-111.0	94.8
MW263D	9/05/2023 11:29	Clear, medium turbidity, organic odour, no sheen.	1.33	18.4	135.2	7.44	-84.7	121.1
MW263S	9/05/2023 11:32	Light yellow, low turbidity, no odour, no sheen. Sediment at base of HydraSleeve.	1.61	19.4	353.2	5.87	-5.7	200.1
MW264D	12/05/2023 9:15	Light brown, low turbidity, organic odour, no sheen.	1.18	17.6	256.2	5.79	72.3	278.1
MW264S	12/05/2023 9:15	Light yellow, low turbidity, no odour, no sheen.	0.88	16.7	198.1	4.53	175.7	381.5
MW270D	16/05/2023 11:26	Light grey, low turbidity, no odour, no sheen.	1.83	19.9	229.5	6.51	-125.9	79.9
MW270S	9/08/2023 8:15	Yellow, low turbidity, sulfurous odour, no sheen. Suspended and settled organic matter in Hydrasleeve.	2.56	11.8	190.5	6.43	-217.0	-11.2
MW270S	16/05/2023 11:13	Yellow, low turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve. Suspended organic matter (decomposing).	1.15	20.0	804.0	6.88	-129.1	76.7
MW270S	9/08/2023 8:40	Yellow, low turbidity, sulfurous odour, no sheen. Suspended and settled organic matter in Hydrasleeve.	1.29	13.9	408.0	6.80	-149.0	56.8
MW271D	15/05/2023 10:52	Grey, low turbidity, no odour, no sheen.	1.02	18.8	220.3	6.12	-24.0	181.8
MW271S	15/05/2023 11:09	Orange, low turbidity, no odour, no sheen.	4.00	18.0	422.2	5.28	19.1	224.9
MW278D	11/05/2023 14:38	Yellow/brown, low turbidity, sulfurous odour, no sheen. Organic matter at base of HydraSleeve.	0.93	20.9	290.0	6.24	132.3	338.1
MW278S	11/05/2023 14:47	Light brown, low turbidity, no odour, no sheen.	1.16	20.7	236.9	5.68	-33.2	172.6
MW279S	9/05/2023 10:55	Light yellow, medium turbidity, no odour, no sheen.	2.17	16.5	2,367.0	6.95	-86.3	119.5
MW280S	18/05/2023 9:05	Light brown, low turbidity, septic odour, no sheen. Suspended organic matter (decomposing).	1.03	16.4	144.0	5.02	-42.5	163.3

Table T2 - Groundwater Quality Parameters and Observations

Location Code	Sampled Date Time	Sample Comment	Water Quality Parameters					
			Dissolved Oxygen	Temperature	Electrical Conductivity	pH	Redox Potential Er	Redox Potential Eh (Corrected)
			mg/L	°C	µS/cm	pH Units	mV	mV
MW281S	10/05/2023 9:23	Clear, low turbidity, sulfurous odour, no sheen.	1.81	17.8	221.0	4.85	1.2	207.0
MW282S	10/05/2023 9:10	Light yellow, medium turbidity, sulfurous odour, no sheen.	3.40	16.9	148.2	4.97	3.9	209.7
MW315D	18/05/2023 10:05	Clear, no turbidity, sulfurous odour, no sheen.	1.16	18.3	100.5	5.41	-50.3	155.5
MW315S	18/05/2023 9:45	Yellow, no turbidity, sulfurous odour, no sheen.	3.69	18.4	163.5	5.05	-19.4	186.4
MW316D	9/05/2023 13:18	Grey, medium turbidity, no odour, no sheen. Organic matter at base of HydraSleeve.	1.94	17.7	24,035.0	7.02	-94.0	111.8
MW317D	12/05/2023 9:16	Brown/orange, low turbidity, no odour, no sheen.	0.95	20.4	153.5	5.31	128.1	333.9
MW317S	12/05/2023 9:23	Yellow, low turbidity, organic odour, no sheen. Suspended organic matter. Strong odour (decomposing/rotting).	0.81	19.8	84.0	4.57	-7.9	197.9
MW318D	11/05/2023 11:03	Clear, medium turbidity, no odour, no sheen.	0.88	19.6	273.2	6.17	-55.5	150.3
MW318S	11/05/2023 11:03	Clear, medium turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve. White suspended particulates.	0.92	19.7	186.3	5.14	-52.3	153.5
MW406	8/05/2023 10:43	Light yellow, no turbidity, no odour, no sheen.	2.35	20.4	122.2	4.85	213.2	419.0
MW433	9/05/2023 14:18	Dark brown, high turbidity, sulfurous odour, no sheen. Sampled with bailer by purging 7 L of water until water quality parameters stabilised.	1.05	19.7	103.4	5.53	-14.4	191.4
MW466	10/05/2023 10:14	Light yellow, no turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve. Trace orange/brown suspended particulates.	0.87	18.0	102.4	5.31	-40.5	165.3
MW468	10/05/2023 10:02	Yellow, low turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve.	1.41	17.8	115.5	5.01	0.7	206.5
MW471	10/05/2023 9:54	Yellow, low turbidity, sulfurous odour, no sheen. Sediment at base of HydraSleeve.	2.59	16.7	268.6	5.16	-35.2	170.6
MW829	11/05/2023 13:14	Light yellow, medium turbidity, no odour, no sheen. Sampled with bailer.	5.14	21.1	129.7	5.40	7.5	213.3
MW842	18/05/2023 13:25	Clear, no turbidity, sulfurous odour, no sheen. Sampled with peristaltic pump.	0.36	19.7	246.0	5.08	-42.0	163.8
MW844	18/05/2023 13:00	Clear, no turbidity, organic odour, no sheen. Sampled with peristaltic pump.	0.21	20.2	106.8	4.99	-26.6	179.2
POT046	16/05/2023 14:25	Clear, no turbidity, sulfurous odour, no sheen.	1.90	20.9	233.8	5.24	-17.6	188.2
POT085	15/05/2023 14:45	Light yellow, no turbidity, sulfurous odour, no sheen.	1.70	21.4	222.0	5.12	57.7	263.5
POT087	17/05/2023 11:06	Light yellow, no turbidity, sulfurous odour, no sheen.	0.68	18.0	338.1	5.48	0.9	206.7
POT089	17/05/2023 11:16	Clear, no turbidity, sulfurous odour, no sheen.	1.13	18.4	338.7	5.27	9.3	215.1
POT107	15/05/2023 15:30	Light yellow, no turbidity, sulfurous odour, no sheen.	1.48	20.2	491.5	5.84	2.6	208.4
POT144	17/05/2023 10:25	Clear, no turbidity, sulfurous odour, no sheen.	2.04	18.6	328.8	5.11	-16.6	189.2
POT236	16/05/2023 12:55	Light yellow, no turbidity, no odour, no sheen.	3.11	19.9	132.1	5.84	111.0	316.8
POT257	16/05/2023 12:07	Light brown, no turbidity, no odour, no sheen.	3.95	17.2	427.7	6.02	108.3	314.1
POT382	17/05/2023 13:44	Clear, no turbidity, no odour, no sheen.	1.60	19.5	2,271.0	8.42	-146.3	59.5

**Notes**

mV                    millivolts  
mg/L                  milligrams per Litre  
°C                     degrees Celsius  
µS/cm                microSiemens per centimetre  
Corrected field Redox measurement Eh = Er + 205.8  
n/a                     not applicable

Table T3 - Surface Water Quality Parameters and Observations

Location Code	Alternative Name	Sampled Date Time	Location Comments	Sample Depth From (m)	Sample Depth To (m)	Sample Comment	Water Quality Parameters					
							Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
SW001	MD1	8/05/2023 15:43	Creek/drainage channel. Waterbody 3 m wide, 0.8 m deep. Water flow not observed.	0.10	0.20	Light yellow, low turbidity, no odour, no sheen. Suspe	5.73	17.9	180.6	5.55	138.3	344.1
SW005	MD5	9/05/2023 11:17	Drainage channel with concrete culvert. Waterbody 4 m wide, 0.5 m deep. Water flow not observed.	0.00	0.30	Clear, low turbidity, no odour, no sheen. Biofilm on w	4.39	13.8	259.4	6.44	92.1	297.9
SW006	MD6	8/05/2023 16:13	Creek/drainage channel. Waterbody 2 m wide, 0.3 m deep. Shrubs on both banks. Water flow not observed.	0.10	0.20	Light brown, no turbidity, no odour, no sheen.	6.28	13.5	126.6	6.21	133.4	339.2
SW007	MD7	8/05/2023 15:57	Drainage channel with concrete culvert. Waterbody 1.5 m wide, 0.4 m deep. Water flow observed.	0.10	0.20	Light yellow, no turbidity, no odour, no sheen.	3.65	16.4	82.4	6.62	98.1	303.9
SW009	MD8	8/05/2023 15:12	Creek/drainage channel. Waterbody 2 m wide, 0.3 m deep. Algae observed. Decomposing organic matter on bottom. Water flow observed.	0.10	0.20	Light brown, no turbidity, no odour, no sheen.	7.86	16.2	149.8	5.22	155.8	361.6
SW011	MD10	11/05/2023 10:30	Moors Drain. Waterbody 3 m wide, 0.3 m deep. Algae observed. Water flow observed.	0.00	0.30	Clear, no turbidity, no odour, no sheen.	8.46	16.4	169.0	5.82	201.5	407.3
SW014	MD14	9/05/2023 10:00	Drainage channel with concrete outlet. Waterbody 5 m wide, 0.4 m deep. Water flow observed.	0.00	0.20	Clear, no turbidity, no odour, no sheen.	7.19	12.4	205.3	6.31	48.1	253.9
SW019	TC12	17/05/2023 11:42	Creek. Waterbody 4 m wide, 1.5 m deep. Water flow observed.	0.10	0.25	Light yellow, no turbidity, no odour, no sheen.	4.71	15.6	1029.0	7.02	4.9	210.7
SW023	TC6A	9/05/2023 10:51	Creek with concrete bridge. Waterbody 5 m wide, 1 m deep. Water flow not observed.	0.00	0.30	Grey/brown, no turbidity, no odour, no sheen.	6.20	14.3	952.0	6.62	31.5	237.3
SW024	TC7	9/05/2023 11:53	Creek with large concrete culvert. Waterbody 10 m wide, 0.5 m deep. Foam on surface observed Water flow observed.	0.00	0.30	Light yellow, no turbidity, no odour, no sheen.	5.01	13.9	21108.0	6.84	107.5	313.3
SW047	BD03	10/05/2023 14:02	Creek/ drainage line. Waterbody 4 m wide, 1 m deep. Algae and lily pads observed. Water flow not observed.	0.20	0.30	Clear, no turbidity, no odour, no sheen.	3.55	20.3	121.7	5.25	186.2	392.0
SW048	BD04	10/05/2023 12:08	Drain. Waterbody 5 m wide, 0.3m deep. Moderately vegetated. Water flow not observed.	0.00	0.30	Clear, no turbidity, no odour, no sheen. Suspended o	8.31	23.3	84.5	5.85	84.9	290.7
SW055	DD1	10/05/2023 10:45	Creek/drainage channel. Waterbody 2 m wide, 0.3 m deep. Vegetation on edges. Water flow observed.	0.00	0.20	Clear, low turbidity, no odour, no sheen.	3.28	15.2	96.7	5.12	109.1	314.9
SW059	DD2	16/05/2023 13:20	Creek/drainage channel. Waterbody 4 m wide, 0.4 m deep. Water flow not observed.	0.10	0.20	Yellow, no turbidity, no odour, biosheen.	2.68	18.9	283.5	5.21	179.9	385.7
SW060	DD3	11/05/2023 11:47	Creek/drainage channel. Waterbody 4 m wide, 1 m deep. Algae and duck weed observed. Water flow not observed.	0.20	0.20	Light yellow, no turbidity, no odour, no sheen.	4.28	17.9	236.1	5.73	187.2	393.0
SW062	DD5	11/05/2023 10:06	Creek/drainage channel with culvert beneath road. Waterbody 6 m wide, 0.4 m deep. Water flow not observed.	0.10	0.20	Yellow, low turbidity, no odour, no sheen.	3.47	14.0	1741.0	6.65	143.6	349.4
SW079	TC2	9/05/2023 11:50	Creek. Waterbody 4 m wide, 1m deep. Vegetation on both banks. Water flow not observed.	0.40	0.40	Light brown, medium turbidity, no odour, no sheen.	4.34	13.7	2483.0	6.78	-44.0	161.8
SW081	TFD1	11/05/2023 9:43	Creek/drainage channel. Waterbody 6 m wide, 0.4m deep. Water flow observed.	0.20	0.30	Light yellow, low turbidity, no odour, no sheen.	5.90	13.3	1179.0	6.36	208.3	414.1
SW108	LC	10/05/2023 13:46	Lake Cochran. Waterbody 100 m wide, approx. 2 m deep. Water flow not observed.	0.40	0.50	Light yellow, medium turbidity, no odour, no sheen. S	5.84	17.3	102.1	6.18	146.6	352.4
SW110	LC_B	10/05/2023 11:20	Lake Cochran. Waterbody approx. 75 m x 150 m wide, approx. 2 m deep. Water flow not observed.	0.00	0.30	Clear, no turbidity, no odour, no sheen.	7.02	15.9	92.7	5.60	216.3	422.1
SW259	FCD4	16/05/2023 10:03	Creek/drainage channel. Waterbody 6 m wide, 0.4 m deep. Water flow not observed.	0.10	0.20	Light yellow, low turbidity, no odour, no sheen.	4.51	17.3	15254.0	7.16	115.3	321.1
SW600		15/05/2023 13:09	Creek/drainage channel. Waterbody 4 m wide, 0.4 m deep. Water flow not observed.	0.10	0.20	Light yellow, no turbidity, organic odour, no sheen.	4.79	18.0	2820.0	7.09	-33.1	172.7

Notes

- mV milliVolts
- mg/L milligrams per Litre
- °C degrees Celsius
- µS/cm microSiemens per centimetre
- Corrected field Redox measurement Eh = Er + 205.8

Table T4 - Sediment and Soil Observations

Location Code	Alternative Name	Sampled Date Time	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD001	MD1	8/05/2023 15:45	0.00	0.20	Silty SAND: dark grey, medium to coarse grained, high organic content (leaves, sticks). Organic odour, no staining.
SD005	MD5	9/05/2023 11:14	0.00	0.20	Silty CLAY: brown, medium plasticity, with gravel inclusions, angular to subangular, up to 10 mm, and organic inclusions (roots, leaves). No odour or staining.
SD006	MD6	8/05/2023 16:09	0.00	0.20	Sandy SILT: dark brown, low plasticity, fine grained sand, fine organic matter, saturated. Organic odour, no staining.
SD007	MD7	8/05/2023 15:59	0.00	0.20	Silty SAND: dark brown, fine to medium grained, with gravel inclusions, rounded, and fine organic inclusions. No odour or staining.
SD009	MD8	8/05/2023 15:08	0.00	0.20	Silty SAND: grey-black, medium to coarse grained, sub-angular sand, trace organic material, saturated. Organic odour, no staining.
SD011	MD10	11/05/2023 10:26	0.00	0.30	Silty SAND: brown-grey, fine to medium grained, with organic inclusions. No odour or staining.
SD014	MD14	9/05/2023 10:02	0.00	0.20	Silty SAND: brown, fine to coarse grained, high organic content (leaves, sticks). Organic odour, no staining.
SD019	TC12	17/05/2023 11:48	0.00	0.20	SILT: dark brown, saturated, high organic content (sticks). Organic odour, no staining.
SD023	TC6A	9/05/2023 10:54	0.00	0.30	Sandy SILT: dark brown, low plasticity, saturated, medium grained sand. No odour or staining.
SD024	TC7	9/05/2023 11:53	0.00	0.30	Silty CLAY: brown, low plasticity, with organic inclusions (roots). Organic odour, no staining.
SD047	BD03	10/05/2023 14:07	0.10	0.30	SAND: brown-orange, fine to medium grained, sub-angular to sub-rounded, with organic inclusions (rootlets). No odour or staining.
SD048	BD04	10/05/2023 12:08	0.00	0.30	Silty SAND: grey, fine to medium grained, with organic inclusions (rootlets). No odour or staining.
SD055	DD1	10/05/2023 10:51	0.00	0.10	Silty SAND: brown, fine to coarse grained, with organic inclusions (roots). No odour or staining.
SD059	DD2	16/05/2023 13:25	0.00	0.20	SAND: light brown, medium to coarse grained, sub-angular to sub-rounded, with organic inclusions (rootlets), saturated. No odour or staining.
SD060	DD3	11/05/2023 11:45	0.00	0.20	SAND: medium to coarse grained, sub-angular to sub-rounded, dark brown, saturated, with organic inclusions (rootlets). No odour or staining.
SD062	DD5	11/05/2023 10:09	0.00	0.20	Sandy SILT: dark grey, low plasticity, fine to medium grained sand, with fine gravel and organic inclusions (sticks and tree nuts). No odour, no staining.
SD079	TC2	9/05/2023 11:56	0.00	0.20	SILT: dark brown-black, low plasticity, with trace organic content, saturated. No odour or staining.
SD081	TFD1	11/05/2023 9:47	0.00	0.20	SILT: black, low plasticity, with trace organic content, saturated. Organic odour, no staining.
SD108	LC	10/05/2023 13:50	0.00	0.30	Silty SAND: brown, fine to medium grained, sub-angular to sub-rounded, with organic inclusions (vegetation and roots). Organic odour, no staining.
SD110	LC_B	10/05/2023 11:20	0.00	0.30	Sandy SILT: brown, low plasticity, fine to coarse grained sand, high organic content (roots). No odour or staining.
SD254	FC1A	16/05/2023 10:39	0.00	0.20	Sandy CLAY: brown, medium plasticity, fine grained sand, sub-angular to sub-rounded, with organic inclusions (rootlets). Organic odour, black staining.
SD255	FC1B	16/05/2023 10:31	0.00	0.20	Silty CLAY: brown, medium plasticity, with organic inclusions (rootlets). Organic odour, black staining.
SD259	FCD4	16/05/2023 10:00	0.00	0.20	Silty SAND: dark brown, medium to coarse grained, sub-angular to sub-rounded, saturated. No odour or staining.
SD326	FC1C	16/05/2023 10:20	0.00	0.20	Sandy SILT: brown, low plasticity, fine grained sand, with organic inclusions (rootlets) and shell inclusions. Organic odour, black staining.
SD600		15/05/2023 13:12	0.00	0.20	Sandy SILT: black-grey, fine to medium grained sand, sub-angular to sub-rounded, with organic inclusions (sticks and vegetation). Organic odour, no staining.
SS101	SS001, SS01	9/05/2023 9:50	0.00	0.20	Silty SAND: brown, fine to medium grained, medium plasticity, with organic inclusions (roots and grass). No odour or staining.
SS102	SS002, SS02	9/05/2023 8:53	0.00	0.20	Sandy SILT: brown-yellow, high plasticity, fine grained, with organic inclusions (roots and grass). No odour or staining.
SS103	SS003, SS03	9/05/2023 14:42	0.20	0.20	Sandy SILT: dark brown, low plasticity, fine to medium grained sand, with fine gravel and trace organic matter. Organic odour, no staining.
SS104	SS004, SS04	9/05/2023 14:58	0.20	0.20	Sandy SILT: dark brown, low plasticity, fine grained sand, sub-angular to sub-rounded, with organic inclusions (rootlets). Organic odour, no staining.
SS105	SS005, SS05	9/05/2023 15:20	0.10	0.10	Sandy SILT: dark brown, low plasticity, fine grained sand, sub-angular to sub-rounded, with organic inclusions (rootlets). Organic odour, no staining.
SS106	SS006, SS06	9/05/2023 7:57	0.00	0.20	Sandy SILT: dark brown, low plasticity, fine grained, sand, sub-angular to sub-rounded, wet, with trace rootlets. No odour, no staining.
SS107	SS007, SS07	11/05/2023 10:27	0.10	0.20	Sandy SILT: dark brown, low plasticity, medium to coarse grained, sub-angular to sub-rounded, with organic inclusions (rootlets). No odour, no staining.
SS108	SS008, SS08	16/05/2023 13:35	0.00	0.15	Silty SAND: brown, medium to coarse grained, sub-angular to sub-rounded, with organic inclusions (rootlets), dry. No odour or staining.
SS109	SS009, SS09	11/05/2023 11:59	0.10	0.20	Sandy Silt: brown, low plasticity, fine to medium grained, sub-angular to sub-rounded, organic inclusions (rootlets and grass). No odour or staining.
SS110	SS010, SS10	11/05/2023 10:03	0.20	0.20	Sandy SILT: dark brown, fine to medium grained, sub-angular to sub-rounded, with organic inclusions (rootlets), wet. Organic odour, no staining.
SS111	SS011, SS11	11/05/2023 9:20	0.00	0.20	Silty SAND: brown, medium to coarse grained, sub-angular to sub-rounded, damp, low plasticity. Organic odour, no staining.
SS112	SS012, SS12	11/05/2023 9:53	0.00	0.20	Gravelly SAND: brown, medium to coarse grained, fine to medium gravel, sub-angular to sub-rounded sand, angular gravel, with organic inclusions (rootlets). No odour or staining.









Table T5 - Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.05	0.01	0.01	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.02	0.05
PFAS NEMP 2020 Drinking Water	0.56			0.07																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Lab Report #	<0.01	<0.01	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05
MW315S	18 May 2023	0908_MW315S_230518	Normal	ES2317415	<0.01	<0.01	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW316D	09 May 2023	0908_MW316D_230509	Normal	ES2315943	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW317D	12 May 2023	0908_MW317D_230512	Normal	ES2315943	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW317S	12 May 2023	0908_MW317S_230512	Normal	ES2315943	<0.01	0.04	0.02	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW318D	11 May 2023	0908_MW318D_230511	Normal	ES2315943	<0.01	0.04	0.28	0.32	0.63	0.09	0.08	<0.02	<0.02	<0.1	0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW318S	11 May 2023	0908_MW318S_230511	Normal	ES2315943	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW406	08 May 2023	0908_MW406_230508	Normal	ES2315943	<0.01	<0.01	0.03	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW406	08 May 2023	0908_QC100_230508	Field_D	ES2315943	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW406	08 May 2023	0908_QC200_230508	Interlab_D	323025	<0.01	<0.01	0.04	0.04	0.04	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW433	09 May 2023	0908_MW433_230509	Normal	ES2315943	<0.01	0.02	0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	10 May 2023	0908_MW466_230510	Normal	ES2315943	0.16	18.4	1.30	19.7	20.6	0.07	0.09	0.19	<0.02	<0.1	0.09	0.28	0.06	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW468	10 May 2023	0908_MW468_230510	Normal	ES2315943	0.21	14.0	1.35	15.4	16.4	0.07	0.09	0.23	<0.02	<0.1	0.08	0.26	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW471	10 May 2023	0908_MW471_230510	Normal	ES2315943	0.56	27.8	6.98	34.8	38.5	0.44	0.60	0.57	<0.02	0.2	0.26	0.88	0.18	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW829	11 May 2023	0908_MW829_230511	Normal	ES2315943	<0.01	0.01	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW842	18 May 2023	0908_MW842_230518	Normal	ES2317415	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	18 May 2023	0908_MW844_230518	Normal	ES2317415	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	16 May 2023	0908_POT046_230516	Normal	ES2317284	<0.01	0.06	0.02	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT085	15 May 2023	0908_POT085_230515	Normal	ES2317361	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	17 May 2023	0908_POT087_230517	Normal	ES2317413	<0.01	0.17	0.04	0.21	0.21	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT089	17 May 2023	0908_POT089_230517	Normal	ES2317413	0.01	0.23	0.28	0.51	0.60	0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT107	15 May 2023	0908_POT107_230515	Normal	ES2317358	0.01	0.03	0.02	0.05	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT144	17 May 2023	0908_POT144_230517	Normal	ES2317355	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT236	16 May 2023	0908_POT236_230516	Normal	ES2317282	<0.01	0.03	0.01	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT257	16 May 2023	0908_POT257_230516	Normal	ES2317281	0.02	0.02	<0.01	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT382	17 May 2023	0908_POT382_230517	Normal	ES2317412	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02																		







PFAS - Perfluoroalkyl Sulfonamides						
Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0002	0.0005	0.0002	0.0005	0.0002	0.0005

Location Code	Date	Field ID	Sample Type	Lab Report #	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
SD001	08 May 2023	0908_SD001_230508	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	09 May 2023	0908_SD005_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	09 May 2023	0908_QC113_230509	Field_D	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD005	09 May 2023	0908_QC213_230509	Interlab_D	323025	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD006	08 May 2023	0908_SD006_230508	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD007	08 May 2023	0908_SD007_230508	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD009	08 May 2023	0908_SD009_230508	Normal	ES2315943	0.0004	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD009	08 May 2023	0908_QC104_230508	Field_D	ES2315943	0.0006	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD009	08 May 2023	0908_QC204_230508	Interlab_D	323025	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.005
SD011	11 May 2023	0908_SD011_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD014	09 May 2023	0908_SD014_230509	Normal	ES2315943	<0.0002	<0.0006	<0.0002	<0.0006	<0.0006	<0.0002	<0.0006
SD014	09 May 2023	0908_QC207_230509	Interlab_D	323025	<0.01	<0.01	<0.002	<0.01	<0.01	<0.002	<0.05
SD019	17 May 2023	0908_SD019_230517	Normal	ES2317413	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD023	09 May 2023	0908_SD023_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD024	09 May 2023	0908_SD024_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD047	10 May 2023	0908_SD047_230510	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD048	10 May 2023	0908_SD048_230510	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD055	10 May 2023	0908_SD055_230510	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD059	16 May 2023	0908_SD059_230516	Normal	ES2317415	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD059	16 May 2023	0908_QC116_230516	Field_D	ES2317415	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD059	16 May 2023	0908_QC216_230516	Interlab_D	323627	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SD060	11 May 2023	0908_SD060_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD062	11 May 2023	0908_SD062_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD079	09 May 2023	0908_SD079_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD081	11 May 2023	0908_SD081_230511	Normal	ES2315943	<0.0002	<0.0006	<0.0002	<0.0006	<0.0006	<0.0002	<0.0006
SD108	10 May 2023	0908_SD108_230510	Normal	ES2315943	0.0003	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD110	10 May 2023	0908_SD110_230510	Normal	ES2315943	0.0520	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD254	16 May 2023	0908_SD254_230516	Normal	ES2317277	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD255	16 May 2023	0908_SD255_230516	Normal	ES2317277	0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD259	16 May 2023	0908_SD259_230516	Normal	ES2317277	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD326	16 May 2023	0908_SD326_230516	Normal	ES2317277	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SD600	15 May 2023	0908_SD600_230515	Normal	ES2317275	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005

**Notes**  
LOR Limit of Reporting  
Normal Primary sample  
Field\_D Intra-laboratory duplicate sample  
Interlab\_D Inter-laboratory duplicate sample  
Denotes first-time detection above LOR

Table T8 - Surface Soil Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids			
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0005	0.0001	0.0001	0.0002	0.0002
PFAS NEMP 2020 Public open space (HIL C)	10	1	1	1																			
PFAS NEMP 2020 Ecological indirect exposure		0.01																					
PFAS NEMP 2020 Ecological direct exposure	10	1																					
Location Code	Date	Field ID	Sample Type	Lab Report #																			
SS101	09 May 2023	0908_SS101_230509	Normal	ES2315943	<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS101	09 May 2023	0908_QC205_230509	Interlab_D	323025	<0.0001	0.0009	<0.0001	0.0009	0.0009	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005
SS102	09 May 2023	0908_SS102_230509	Normal	ES2315943	<0.0002	0.0043	0.0034	0.0077	0.0087	0.0002	0.0004	<0.0002	<0.0002	<0.0001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS102	09 May 2023	0908_QC103_230509	Field_D	ES2315943	<0.0002	0.0049	0.0023	0.0072	0.0079	<0.0002	0.0003	<0.0002	<0.0002	<0.0001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS103	09 May 2023	0908_SS103_230509	Normal	ES2315943	0.0002	0.0212	0.0044	0.0256	0.0278	<0.0002	0.0003	0.0004	<0.0002	0.0001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS104	09 May 2023	0908_SS104_230509	Normal	ES2315943	<0.0002	0.0005	<0.0002	0.0005	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS105	09 May 2023	0908_SS105_230509	Normal	ES2315943	<0.0002	0.0011	<0.0002	0.0011	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS106	09 May 2023	0908_SS106_230509	Normal	ES2315943	<0.0002	0.0020	<0.0002	0.0020	0.0020	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS107	11 May 2023	0908_SS107_230511	Normal	ES2315943	<0.0002	0.0026	<0.0002	0.0026	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS107	11 May 2023	0908_QC110_230511	Field_D	ES2315943	<0.0002	0.0032	<0.0002	0.0032	0.0032	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS107	11 May 2023	0908_QC210_230511	Interlab_D	323025	<0.0001	0.0034	<0.0001	0.0034	0.0037	<0.0001	<0.0001	<0.0001	<0.0002	0.0003	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005
SS108	16 May 2023	0908_SS108_230516	Normal	ES2317415	<0.0002	0.0025	<0.0002	0.0025	0.0027	<0.0002	<0.0002	<0.0002	0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS109	11 May 2023	0908_SS109_230511	Normal	ES2315943	<0.0002	0.0045	<0.0002	0.0045	0.0050	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS110	11 May 2023	0908_SS110_230511	Normal	ES2315943	<0.0002	0.0017	<0.0002	0.0017	0.0017	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS111	11 May 2023	0908_SS111_230511	Normal	ES2315943	<0.0002	0.0005	<0.0002	0.0005	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
SS112	11 May 2023	0908_SS112_230511	Normal	ES2315943	<0.0002	0.0017	<0.0002	0.0017	0.0017	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005

**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first-time detection above LOR  
 Denotes new exceedence of human health and/or ecological screening criteria

PFAS - Perfluoroalkyl Sulfonamides							
	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002	0.0005
PFAS NEMP 2020 Public open space (HIL C)							
PFAS NEMP 2020 Ecological indirect exposure							
PFAS NEMP 2020 Ecological direct exposure							

Location Code	Date	Field ID	Sample Type	Lab Report #							
SS101	09 May 2023	0908_SS101_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS101	09 May 2023	0908_QC205_230509	Interlab_D	323025	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SS102	09 May 2023	0908_SS102_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS102	09 May 2023	0908_QC103_230509	Field_D	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS103	09 May 2023	0908_SS103_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS104	09 May 2023	0908_SS104_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS105	09 May 2023	0908_SS105_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS106	09 May 2023	0908_SS106_230509	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS107	11 May 2023	0908_SS107_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS107	11 May 2023	0908_QC110_230511	Field_D	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS107	11 May 2023	0908_QC210_230511	Interlab_D	323025	<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002	<0.005
SS108	16 May 2023	0908_SS108_230516	Normal	ES2317415	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS109	11 May 2023	0908_SS109_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS110	11 May 2023	0908_SS110_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS111	11 May 2023	0908_SS111_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005
SS112	11 May 2023	0908_SS112_230511	Normal	ES2315943	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0002	<0.0005



**Notes**  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample  
 Denotes first-time detection above LOR  
 Denotes new exceedence of human health and/or ecological screening criterion



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR					0.0005	0.0002	0.0005	0.0002																												
PFAS NEMP 2020 Drinking Water					0.56		0.07																													
PFAS NEMP 2020 Freshwater 99%					19	0.00023																														
MW103D	13 Apr 2015	MW103-D_20150413	Normal	NSW_0908_PFAS	0.01	<0.01	0.57	0.57	-	0.02	-	-	<0.01	-	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	
MW103D	13 Apr 2015	QC100_HW_20150413	Field_D	NSW_0908_PFAS	0.01	<0.01	0.63	0.63	-	0.02	-	-	<0.01	-	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	-	-	
MW103D	07 Mar 2016	MW103D_07032016	Normal	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	
MW103D	03 Feb 2017	MW103D_GW_030217	Normal	NSW_0908_PFAS	0.03	0.03	0.45	0.48	0.51	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW103D	01 May 2018	MW103D_GW_01052018	Normal	NSW_0908_PFAS	0.02	<0.01	0.32	0.32	0.44	0.02	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW103D	01 May 2018	MW103D_GW_01052018	Normal	NSW_0908_PFAS	-	-	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW103D	01 May 2018	QC106_GW_01052018	Field_D	NSW_0908_PFAS	0.02	0.01	0.34	0.35	0.48	0.02	0.04	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	01 May 2018	QC206_GW_01052018	Field_D	NSW_0908_PFAS	0.02	<0.01	0.33	0.33	0.48	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	01 May 2018	QC206_GW_01052018	Field_D	NSW_0908_PFAS	-	-	-	0.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW103D	27 Nov 2018	0908_MW103D_181127	Normal	NSW_0908_PFAS	0.05	0.03	0.47	0.5	0.74	0.1	0.02	0.04	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	31 May 2019	0908_MW103D_190531	Normal	NSW_0908_PFAS	0.01	0.02	0.28	0.3	0.38	<0.02	0.02	0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	18 Jun 2019	0908_MW103D_190618	Normal	NSW_0908_PFASMGMT	0.04	0.02	0.49	0.51	0.63	<0.02	<0.02	0.05	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	25 Sep 2019	0908_MW103D_190925	Normal	NSW_0908_PFASMGMT	0.0080	<0.0003	0.299	0.299	0.398	0.0216	0.0209	0.0164	<0.0005	<0.002	0.0027	0.0254	0.0038	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001		
MW103D	03 Dec 2019	0908_MW103D_191203	Normal	NSW_0908_PFAS	0.03	<0.01	0.41	0.41	0.50	<0.02	<0.02	0.04	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	17 Mar 2020	0908_MW103D_200317	Normal	NSW_0908_PFASMGMT	0.04	0.07	0.40	0.47	0.62	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	29 May 2020	0908_MW103D_200529	Normal	NSW_0908_PFASOMP	0.03	<0.01	0.25	0.25	0.37	<0.02	<0.02	0.09	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103D	26 Nov 2020	0908_MW103_D_201126	Normal	NSW_0908_PFASMGMT	0.02	0.14	0.16	0.3	0.41	<0.02	<0.02	0.09	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103S	13 Apr 2015	MW103-S_20150413	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	-	<0.05	<0.05	-	<0.05	-		
MW103S	07 Mar 2016	MW103S_07032016	Normal	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-		
MW103S	07 Mar 2016	QC147_07032016	Field_D	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-		
MW103S	03 Feb 2017	MW103S_GW_030217	Normal	NSW_0908_PFAS	<0.01	0.05	<0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW103S	01 May 2018	MW103S_GW_01052018	Normal	NSW_0908_PFAS	<0.01	<0.01	0.07	0.07	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103S	01 May 2018	MW103S_GW_01052018	Normal	NSW_0908_PFAS	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW103S	27 Nov 2018	0908_MW103S_181127	Normal	NSW_0908_PFAS	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103S	27 Nov 2018	0908_MW103S_181127	Normal	NSW_0908_PFAS	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW103S	29 Mar 2019	0908_MW103S_190329	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	0.03	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103S	31 May 2019	0908_MW103S_190531	Normal	NSW_0908_PFAS	<0.01	<0.01	0.05	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW103S	31 May 2019	0908_MW103S_190531	Normal	NSW_0908_PFAS	-	-	-</																													









Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides																				
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)												
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L											
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001		
PFAS NEMP 2020 Drinking Water					0.56		0.07																																						
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																							











Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0005	0.0002	0.0005	0.0002																									
PFAS NEMP 2020 Drinking Water					0.56		0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																											
MW139	23 Jan 2017	MW139_GW_170123	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	09 Apr 2018	MW139_GW_09042018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	28 Nov 2018	0908_MW139_181128	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	28 Nov 2018	0908_QC106_181128	Field_D	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	28 Nov 2018	0908_QC203_181128	Interlab_D	NSW_0908_PFAS	<0.01	<0.02	<0.01	<0.03	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	
MW139	04 Jun 2019	0908_MW139_190604	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	08 Nov 2019	0908_MW139_191108	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	26 May 2020	0908_MW139_200526	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	12 May 2021	0908_MW139_210512	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	31 May 2022	0908_MW139_220531	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	14 Nov 2022	0908_MW139_221114	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW139	15 May 2023	0908_MW139_230515	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	22 Jan 2016	MW140_22012016	Normal	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW140	10 Jan 2017	MW140_GW_10012017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	26 Apr 2018	MW140_GW_26042018	Normal	NSW_0908_PFAS	<0.01	0.08	<0.02	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	26 Apr 2018	MW140_GW_26042018	Normal	NSW_0908_PFAS	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW140	26 Apr 2018	QC105_GW_26042018	Field_D	NSW_0908_PFAS	<0.01	0.14	<0.02	0.14	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	26 Apr 2018	QC105_GW_26042018	Field_D	NSW_0908_PFAS	-	-	-	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW140	26 Apr 2018	QC205_GW_26042018	Field_D	NSW_0908_PFAS	<0.01	0.07	<0.02	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	26 Apr 2018	QC205_GW_26042018	Field_D	NSW_0908_PFAS	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW140	18 Jun 2018	MW140_GW_180618	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	04 Dec 2018	0908_MW140_18124	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	13 May 2020	0908_MW140_200513	Normal	NSW_0908_PFASOMP	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	12 May 2021	0908_MW140_210512	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	16 May 2022	0908_MW140_220516	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW140	18 May 2023	0908_MW140_230518	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW146AD	07 Feb 2017	MW146D_A_GW_07022017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW146AD	20 Nov 2018	0908_MW146D_A_181120	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<																						

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides																		
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)										
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L									
LOR					0.0005	0.0002	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56		0.07																																					
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																						
MW147S	09 Apr 2018	MW147S_GW_09042018	Normal	NSW_0908_PFA	<0.05	0.07	0.18	0.25	0.33	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	
MW147S	04 Jun 2019	0908_MW147S_190604	Normal	NSW_0908_PFA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12	<0.05	<0.12		
MW147S	28 May 2020	0908_MW147S_200528	Normal	NSW_0908_PFA	<0.01	0.03	0.06	0.09	0.18	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW147S	27 May 2021	0908_MW147S_210527	Normal	NSW_0908_PFA	<0.01	<0.01	<0.02	<0.01	0.07	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW147S	17 May 2022	0908_MW147S_220517	Normal	NSW_0908_PFA	0.01	0.03	0.13	0.16	0.25	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW147S	15 May 2023	0908_MW147S_230515	Normal	NSW_0908_PFA	<0.01	0.03	0.08	0.11	0.18	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW150D	07 Feb 2017	MW150D_GW_07022017	Normal	NSW_0908_PFA	0.04	0.15	1.24	1.39	2.37	0.11	0.13	0.04	<0.02	0.4	0.06	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW150D	10 May 2023	0908_MW150D_230510	Normal	NSW_0908_PFA	0.06	0.25	1.81	2.06	2.96	0.18	0.22	0.06	<0.02	<0.1	0.06	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW150S	01 Feb 2016	MW150_01022016	Normal	NSW_0908_PFA	<0.01	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW150S	07 Feb 2017	MW150S_GW_07022017	Normal	NSW_0908_PFA	<0.01	0.2	0.05	0.25	0.35	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW150S	10 May 2023	0908_MW150S_230510	Normal	NSW_0908_PFA	<0.01	0.03	0.01	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW155	21 Jan 2016	MW155_21012016	Normal	NSW_0908_PFA	<0.01	0.31	-	0.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW155	07 Sep 2016	MW155_070916	Normal	NSW_0908_PFA	0.02	1.1	0.3	1.4	-	<0.01	-	-	<0.01	<0.05	0.03	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	-	<0.05	<0.05	-	-	<0.05	-			
MW155	19 Oct 2016	MW155_191016	Normal	NSW_0908_PFA	0.01	1.2	0.21	1.41	-	<0.01	-	-	<0.01	<0.05	0.03	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	-	<0.05	-	-	<0.05	-					
MW155	12 Jan 2017	MW155_120117	Normal	ACTNSW_Hist_202012-3	0.02	1.5	0.22	1.72	-	<0.01	-	-	<0.01	<0.05	0.03	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	-	<0.05	-						
MW155	13 Jan 2017	MW155_D_120117	Normal	ACTNSW_Hist_202012-3	0.01	1.1	0.19	1.29	-	<0.01	-	-	<0.01	<0.05	0.03	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	-	<0.05	-						
MW155	01 Feb 2017	MW155_GW_010217	Normal	NSW_0908_PFA	0.09	0.67	0.07	0.74	1.24	<0.05	<0.05	<0.05	<0.05	<0.1	0.15	0.1	0.09	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
MW155	20 Apr 2018	MW155_GW_20042018	Normal	NSW_0908_PFA	<0.01	0.69	0.39	1.08	1.2	<0.02	0.03	<0.02	<0.02	<0.1	0.04	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
MW155	21 Nov 2018	0908_MW155_181121	Normal	NSW_0908_PFA	0.01	0.64	0.35	0.99	1.1	<0.02	<0.02	<0.02	<0.02	<0.1	0.04	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
MW155	28 May 2019	0908_MW155_190528	Normal	NSW_0908_PFA	<0.01	1.26	0.25	1.51	1.61	<0.02	<0.02	<0.02	<0.02	<0.1	0.06	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
MW155	12 May 2020	0908_MW155_200512	Normal	NSW_0908_PFA	<0.01	0.87	0.37	1.24	1.51	<0.02	0.02	<0.02	<0.02	0.1	0.09	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
MW155	24 May 2021	0908_MW155_210524	Normal	NSW_0908_PFA	0.02	0.61	0.47	1.08																																				



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)								
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L						
LOR					0.0005	0.0002	0.0005	0.0002																													
PFAS NEMP 2020 Drinking Water					0.56		0.07																														
PFAS NEMP 2020 Freshwater 99%					19	0.00023																															
MW162D	18 May 2022	0908_MW162D_220518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162D	18 May 2022	0908_QC208_220518	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW162D	07 Nov 2022	0908_MW162D_221107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162D	09 May 2023	0908_MW162D_230509	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162D	09 May 2023	0908_QC215_230509	Interlab_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	29 Jan 2016	MW162S_29012016	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	
MW162S	10 Jan 2017	MW162S_GW_10012017	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	27 Mar 2018	MW162S_GW_27032018	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	21 Nov 2018	0908_MW162S_181121	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	22 May 2019	0908_MW162S_190522	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	04 Nov 2019	0908_MW162S_191104	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	18 May 2020	0908_MW162S_200518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	18 May 2022	0908_QC108_220518	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	23 Nov 2020	0908_MW162_S_201123	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	18 May 2021	0908_MW162S_210518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	12 Nov 2021	0908_MW162S_211112	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	18 May 2022	0908_MW162S_220518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	18 May 2022	0908_QC108_220518	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	07 Nov 2022	0908_MW162S_221107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	09 May 2023	0908_MW162S_230509	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW162S	09 May 2023	0908_QC115_230509	Field_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW163	05 Feb 2016	MW163_05022016	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-		
MW163	07 Feb 2017	MW163_GW_070217	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW163	10 Apr 2018	MW163_GW_10042018	Normal	NSW_0908_PFAASOMP	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.05	
MW163	26 Nov 2																																				

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005		
PFAS NEMP 2020 Drinking Water					0.56		0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																											
MW166	09 Nov 2022	0908_MW166_221109	Normal	NSW_0908_PFAASOMP	0.08	6.74	0.84	7.58	7.95	<0.02	0.02	0.08	<0.02	<0.1	0.03	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW166	10 May 2023	0908_MW166_230510	Normal	NSW_0908_PFAASOMP_23	0.05	18.6	0.27	18.9	19.0	<0.02	<0.02	0.04	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW167	13 Jan 2016	MW167_13012016	Normal	NSW_0908_PFAAS	0.61	164	10.3	174.3	-	0.77	-	-	<0.02	-	3.05	0.17	0.02	<0.02	<0.05	<0.05	<0.05	<0.5	-	<0.1	<0.1	-	<0.02	<0.5	-	<0.5	<0.05		
MW167	01 Sep 2016	MW167_010916	Normal	NSW_0908_PFAAS	1.6	120	24	144	-	<0.01	-	-	<0.01	<0.05	5.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW167	01 Sep 2016	QC108_010916	Field_D	NSW_0908_PFAAS	1.9	150	27	177	-	1.2	-	-	<0.01	<0.05	6.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW167	12 Oct 2016	MW167_121016	Normal	NSW_0908_PFAAS	<0.01	110	19	129	-	<0.01	-	-	<0.01	<0.05	3.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW167	17 Jan 2017	MW167_170117	Normal	ACTNSW_Hist_202012-3	3.4	240	32	272	-	<3	-	-	<3	<15	<3	4.7	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3		
MW167	17 Jan 2017	MW167_170117	Normal	NSW_0908_PFAAS	3.4	240	32	272	-	<0.01	-	-	<0.01	<0.05	4.7	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW167	17 Jan 2017	MW167_GW_17012017	Normal	NSW_0908_PFAAS	4.31	276	26.5	302	322	1.26	2.39	2.26	<0.02	<0.1	1.19	7.41	0.95	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW167	17 Jan 2017	MW167_GW_17012017	Normal	NSW_0908_PFAAS	-	-	-	302.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	18 Jan 2017	MW167_GW_18012017	Normal	NSW_0908_PFAAS	5.58	440	82.5	522	547	2.1	2.7	3.28	<0.02	<0.1	1.33	8.74	0.95	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW167	18 Jan 2017	MW167_GW_18012017	Normal	NSW_0908_PFAAS	-	-	-	522.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	03 May 2017	MW167_030517	Normal	ACTNSW_Hist_202012-3	3.3	150	26	176	-	2.1	2.5	2.6	1.7	1.5	1.7	5.6	2.1	1.7	1.6	1.8	1.6	1.5	2	1.4	1.7	1.5	1.2	<1.5	<1.5	<0.3	<1.5	<1.5	
MW167	03 May 2017	QC102_030517	Field_D	ACTNSW_Hist_202012-3	2.3	240	31	271	-	1.1	1.7	1.4	<0.3	0.46	0.84	5.2	0.96	<0.3	<0.3	0.22	<0.3	<0.3	0.32	<0.3	<0.3	<0.3	<1.5	<1.5	<0.3	<1.5	<1.5		
MW167	23 Nov 2017	0908_MW167_231117	Normal	NSW_0908_PFAAS	5.24	426	37.5	464	487	0.71	1.39	8.82	<0.02	0.2	0.63	5.25	0.70	0.13	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	23 Nov 2017	0908_MW167_231117	Normal	NSW_0908_PFAAS	-	-	-	463.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	23 Nov 2017	0908_QC100_231117	Field_D	NSW_0908_PFAAS	5.25	358	37.9	396	418	0.68	1.48	7.86	<0.02	0.1	0.59	4.98	0.68	0.14	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	23 Nov 2017	0908_QC100_231117	Field_D	NSW_0908_PFAAS	-	-	-	395.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	18 Apr 2018	MW167_GW_18042018	Normal	NSW_0908_PFAAS	3.02	465	30.6	496	514	1.22	1.89	2.8	<0.1	<0.5	0.65	8.02	0.55	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
MW167	18 Apr 2018	MW167_GW_18042018	Normal	NSW_0908_PFAAS	-	-	-	495.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	08 Aug 2018	0908_MW167_180808	Normal	NSW_0908_PFAASMGMT	0.87	102	6.67	109	113	0.22	0.33	1.16	<0.02	<0.1	0.22	1.02	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
MW167	04 Sep 2018	0908_MW167_180905	Normal	NSW_0908_PFAASMGMT	1.91	274	16.4	290	300	0.55	1.00	1.35	<0.10	<0.5	0.34	4.40	0.45	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
MW167	02 Oct 2018	0908_MW167_181002	Normal	NSW_0908_PFAASMGMT	6.85	522	25.4	547	576	1.39	2.28	8.07	<0.02	0.5	1.36	7.55	0.87	0.15	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	29 Nov 2018	0908_MW167_181129	Normal	NSW_0908_PFAAS	4.56	372	26.4	398	415	0.63	0.86	6.06	<0.02	0.2	0.54	3.28	0.59	0.08	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	29 Nov 2018	0908_MW167_181129	Normal	NSW_0908_PFAAS	-	-	-	398.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	29 Nov 2018	0908_QC107_181129	Field_D	NSW_0908_PFAAS	3.95	346	25.8	372	387	0.59	0.82	5.28	<0.02	0.2	0.48	3.08	0.56	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	29 Nov 2018	0908_QC107_181129	Field_D	NSW_0908_PFAAS	-	-	-	371.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	22 Jan 2019	0908_MW167_190122	Normal	NSW_0908_PFAASMGMT	2.46	490	16.4	506	517	0.71	0.94	2.30	<0.02	<0.1	0.40	3.24	0.50	0.09	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	02 Apr 2019	0908_MW167_190402	Normal	NSW_0908_PFAASMGMT	1.63	546	17.2	563	576	0.85	0.72	4.23	<0.02	0.2	0.43	3.77	0.46	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	30 May 2019	0908_MW167_190530	Normal	NSW_0908_PFAAS	1.25	391	11.3	402	407	0.31	0.46	0.77	0.04	<0.1	0.26	1.63	0.24	0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW167	30 May 2019	0908_MW167_190530	Normal	NSW_0908_PFAAS	-	-	-	402.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW167	19 Jun 2019	0908_MW167_190619	Normal	NSW_0908_PFAASMGMT	0.9	412	9.44	421	425	0.22	0.48	0.6	<0.02	<0.1	0.17	1.																	

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides																						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)														
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L												
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001			
PFAS NEMP 2020 Drinking Water					0.56		0.07																																								
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																									
MW168	23 Apr 2018	MW168_GW_23042018	Normal	NSW_0908_PFAS	0.3	78.3	4.91	83.2	85.6	0.1	0.18	0.36	0.16	<0.1	0.1	1.03	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW168	23 Apr 2018	MW168_GW_23042018	Normal	NSW_0908_PFAS	-	-	-	83.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW168	08 Aug 2018	0908_MW168_180808	Normal	NSW_0908_PFASMGMT	0.30	29.5	3.15	32.6	34.1	0.07	0.13	0.19	0.25	<0.1	0.06	0.38	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW168	03 Sep 2018	0908_MW168_180903	Normal	NSW_0908_PFASMGMT	1.24	58.2	15.5	73.7	78.0	0.15	0.34	0.49	0.14	<0.1	0.18	1.42	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW168	03 Sep 2018	0908_QC100_180903	Field_D	NSW_0908_PFASMGMT	1.30	56.9	14.0	70.9	75.4	0.14	0.36	0.47	0.16	<0.1	0.19	1.49	0.33	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW168	03 Sep 2018	0908_QC200-180903	Interlab_D	NSW_0908_PFASMGMT	1.0	48	10	58	-	0.14	0.26	0.18	<0.01	0.12	0.19	1.3	0.25	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.055	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	02 Oct 2018	0908_MW168_181002	Normal	NSW_0908_PFASMGMT	0.34	75.5	4.41	79.9	82.5	0.14	0.24	0.40	<0.02	<0.1	0.15	1.21	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	02 Oct 2018	0908_QC104_181002	Field_D	NSW_0908_PFASMGMT	0.35	66.7	4.68	71.4	74.1	0.14	0.23	0.44	<0.02	<0.1	0.16	1.22	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	02 Oct 2018	0908_QC204_181002	Interlab_D	NSW_0908_PFASMGMT	0.23	61	3.0	64	-	0.10	0.16	0.16	<0.01	<0.05	0.11	0.79	0.080	0.012	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	0.015	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	29 Nov 2018	0908_MW168_181129	Normal	NSW_0908_PFAS	0.08	34.2	1.36	35.6	36.3	0.04	0.08	0.08	<0.02	<0.1	0.04	0.37	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	29 Nov 2018	0908_MW168_181129	Normal	NSW_0908_PFAS	-	-	-	35.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW168	29 Nov 2018	0908_QC108_181129	Field_D	NSW_0908_PFAS	0.25	11.6	3.75	15.4	17.6	0.3	0.34	0.22	<0.02	<0.1	0.19	0.83	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	29 Nov 2018	0908_QC108_181129	Field_D	NSW_0908_PFAS	-	-	-	15.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW168	22 Jan 2019	0908_MW168_190122	Normal	NSW_0908_PFASMGMT	0.10	41.5	3.07	44.6	45.9	0.10	0.16	0.12	<0.02	<0.1	0.06	0.71	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	01 Apr 2019	0908_MW168_190401	Normal	NSW_0908_PFASMGMT	0.11	24.6	2.25	26.8	27.4	0.06	0.07	0.10	<0.02	<0.1	0.02	0.19	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	31 May 2019	0908_MW168_190531	Normal	NSW_0908_PFAS	0.07	23.3	1.28	24.58	24.9	0.03	0.06	0.07	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	31 May 2019	0908_MW168_190531	Normal	NSW_0908_PFAS	-	-	-	24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW168	20 Jun 2019	0908_MW168_190620	Normal	NSW_0908_PFASMGMT	0.09	13.5	1.53	15	15.5	0.06	0.09	0.09	<0.02	<0.1	<0.02	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	24 Sep 2019	0908_MW168S_190924	Normal	NSW_0908_PFASMGMT	0.16	25.9	2.17	28.1	30.3	0.16	0.16	0.14	<0.02	<0.1	0.28	1.28	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	06 Nov 2019	0908_MW168_191107	Normal	NSW_0908_PFASOMP	0.09	19.6	1.16	20.8	22.6	0.10	0.18	0.10	<0.02	<0.1	0.16	1.15	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW168	29 Nov 2019	0908_MW168_191129	Normal	NSW_0908_PFASMGMT	0.06	16.5	1.00	17.5	18.4	0.05	0.10	0.07	<0.02	<0.1	0.07	0.57	0.03	<0.02	<0.02	<0.02	<0.0																										







Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBS)	Perfluoropentanoic acid (PFPeS)	Perfluoroheptanoic acid (PFHpS)	Perfluorodecanoic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005			
PFAS NEMP 2020 Drinking Water					0.56		0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																											
MW171S	13 Jan 2021	0908_MW171_S_210113	Normal	NSW_0908_PFASMGMT	0.03	0.72	0.25	0.97	1.16	0.02	0.05	0.07	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW171S	26 Mar 2021	0908_MW171_S_210326	Normal	NSW_0908_PFASMGMT	0.03	0.31	0.18	0.49	0.62	0.03	0.03	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	17 May 2021	0908_MW171S_210517	Normal	NSW_0908_PFASOMP	0.06	0.66	0.39	1.05	1.42	0.03	0.03	0.09	<0.02	<0.1	0.02	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	24 Jun 2021	0908_MW171S_210624	Normal	NSW_0908_PFASMGMT	0.06	0.48	0.28	0.76	1.00	<0.02	<0.02	0.07	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	24 Sep 2021	0908_MW171S_210924	Normal	NSW_0908_PFASMGMT	0.11	0.73	0.25	0.98	1.26	<0.02	<0.02	0.11	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	24 Sep 2021	0908_QC201_210924	Interlab_D	NSW_0908_PFASMGMT	0.12	0.82	0.24	1.1	1.4	<0.01	0.01	0.12	<0.02	<0.02	<0.02	0.06	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	12 Jan 2022	0908_MW171S_220112	Normal	NSW_0908_PFASMGMT	0.15	0.65	0.43	1.08	1.37	<0.02	<0.02	0.12	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	12 Jan 2022	0908_QC100_220112	Field_D	NSW_0908_PFASMGMT	0.16	0.65	0.45	1.1	1.42	<0.02	<0.02	0.13	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	12 Jan 2022	0908_QC200_220112	Interlab_D	NSW_0908_PFASMGMT	0.13	0.48	0.44	0.92	1.2	<0.01	0.02	0.10	<0.02	<0.02	<0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	14 Mar 2022	0908_MW171S_220314	Normal	NSW_0908_PFASMGMT	0.14	0.76	0.47	1.23	1.59	<0.02	0.04	0.15	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	14 Mar 2022	0908_QC100_220314	Field_D	NSW_0908_PFASMGMT	0.12	0.69	0.45	1.14	1.45	<0.02	0.03	0.14	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	14 Mar 2022	0908_QC200_220314	Interlab_D	NSW_0908_PFASMGMT	0.13	0.66	0.52	1.2	1.5	0.01	0.03	0.15	<0.02	<0.02	<0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	19 May 2022	0908_MW171S_220519	Normal	NSW_0908_PFASOMP	0.09	0.87	0.58	1.45	1.82	0.02	0.03	0.19	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	21 Jun 2022	0908_MW171S_220621	Normal	NSW_0908_PFASMGMT	0.08	1.49	0.65	2.14	2.55	<0.02	0.03	0.26	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	21 Jun 2022	0908_QC201_220621	Interlab_D	NSW_0908_PFASMGMT	0.08	1.9	0.53	2.4	2.8	0.01	0.03	0.24	<0.02	<0.02	<0.02	0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	12 Sep 2022	0908_MW171S_220912	Normal	NSW_0908_PFASMGMT	0.06	1.16	0.80	1.96	2.41	0.03	0.06	0.17	<0.02	<0.1	0.03	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	12 Sep 2022	0908_QC100_220912	Field_D	NSW_0908_PFASMGMT	0.05	1.21	0.84	2.05	2.46	0.03	0.06	0.16	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW171S	10 May 2023	0908_MW171S_230510	Normal	NSW_0908_PFASOMP_23	0.07	0.63	0.79	1.42	1.83	0.04	0.06	0.15	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW172	14 Jan 2016	MW172_14012016	Normal	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW172	14 Jan 2016	QC102_WG_14012016	Field_D	NSW_0908_PFAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW172	02 Sep 2016	MW172_020916	Normal	NSW_0908_PFAS	<0.01	0.1	0.03	0.13	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW172	12 Oct 2016	MW172_121016	Normal	NSW_0908_PFAS	<0.01	0.05	0.02	0.07	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW172	16 Jan 2017	MW172_160117	Normal	ACTNSW_Hist_202012-3	<0.01	0.03	0.03	0.06	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW172	16 Jan 2017	MW172_160117	Normal	NSW_0908_PFAS	<0.01	0.03	0.03	0.06	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW172	25 Jan 2017	MW172_GW_25012017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW172	03 May 2017	MW172_030517	Normal	ACTNSW_Hist_202012-3	<0.01	0.31	0.12	0.43	-	0.06	0.04	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW172	09 Aug 2018	0908_MW172_180809	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW172	05 Sep 2018	0908_MW172_180905	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW172	03 Oct 2018	0908_MW172_181003	Normal	NSW																													



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water																																		
PFAS NEMP 2020 Freshwater 99%																																		
MW179D	30 May 2019	0908_MW179D_190530	Normal	NSW_0908_PFA	<0.01	0.02	0.4	0.42	0.75	0.12	0.08	<0.02	<0.02	<0.1	0.03	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179D	08 Nov 2019	0908_MW179D_191108	Normal	NSW_0908_PFA	<0.01	<0.01	0.43	0.43	0.71	0.09	0.08	<0.02	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	13 May 2020	0908_MW179D_200513	Normal	NSW_0908_PFA	<0.01	<0.01	0.36	0.36	0.54	0.05	0.06	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	17 Nov 2020	0908_MW179_D_201117	Normal	NSW_0908_PFA	0.01	<0.01	0.28	0.28	0.41	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	17 May 2021	0908_MW179D_210517	Normal	NSW_0908_PFA	0.02	<0.01	0.41	0.41	0.63	0.04	0.05	<0.02	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	16 Nov 2021	0908_MW179D_211116	Normal	NSW_0908_PFA	0.02	<0.01	0.46	0.46	0.69	0.05	0.05	<0.02	<0.02	<0.1	<0.02	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	19 May 2022	0908_MW179D_220519	Normal	NSW_0908_PFA	<0.01	0.01	<0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	10 Nov 2022	0908_MW179D_221110	Normal	NSW_0908_PFA	0.04	0.28	0.86	1.14	1.68	0.08	0.12	0.03	<0.02	<0.1	0.05	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179D	10 May 2023	0908_MW179D_230510	Normal	NSW_0908_PFA	0.06	1.17	1.33	2.5	3.25	0.13	0.19	0.06	<0.02	<0.1	0.06	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179S	20 Jan 2016	MW179S_20012016	Normal	NSW_0908_PFA	0.02	0.11	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW179S	20 Jan 2016	QC108_WG_20012016	Field_D	NSW_0908_PFA	0.04	0.13	-	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW179S	30 Aug 2016	MW179S_300816	Normal	NSW_0908_PFA	0.02	0.2	0.24	0.44	-	0.01	-	<0.01	<0.05	0.01	0.09	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	15 Sep 2016	MW179S_150916	Normal	NSW_0908_PFA	0.025	0.25	0.23	0.48	-	0.016	0.026	0.014	<0.01	<0.5	0.013	0.051	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	18 Oct 2016	MW179S_181016	Normal	NSW_0908_PFA	0.04	0.09	0.62	0.71	-	0.03	-	<0.01	<0.05	0.03	0.16	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	16 Jan 2017	MW179S_160117	Normal	ACTNSW_Hist_202012-3	0.01	0.09	0.21	0.3	-	0.02	-	<0.01	<0.05	<0.01	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	16 Jan 2017	MW179S_160117	Normal	NSW_0908_PFA	0.01	0.09	0.21	0.3	-	0.02	-	<0.01	<0.05	<0.01	0.03	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	19 Jan 2017	MW179S_GW_19012017	Normal	NSW_0908_PFA	0.01	0.08	0.26	0.34	0.42	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW179S	04 May 2017	MW179S_040517	Normal	ACTNSW_Hist_202012-3	0.06	0.17	1.2	1.37	-	0.08	0.1	0.03	<0.01	<0.05	0.05	0.25	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW179S	19 Apr 2018	MW179S_GW_19042018	Normal	NSW_0908_PFA	0.06	0.46	1.67	2.13	3.13	0.17	0.24	0.03	<0.02	<0.1	0.09	0.38	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	22 Nov 2018	0908_MW179S_181122	Normal	NSW_0908_PFA	0.05	0.46	0.83	1.29	1.67	0.08	0.09	0.06	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	30 May 2019	0908_MW179S_190530	Normal	NSW_0908_PFA	0.02	0.59	0.74	1.33	1.65	0.08	0.12	0.03	<0.02	<0.1	0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	08 Nov 2019	0908_MW179S_191108	Normal	NSW_0908_PFA	0.04	0.55	1.51	2.06	2.80	0.19	0.24	0.04	<0.02	<0.1	0.04	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	13 May 2020	0908_MW179S_200513	Normal	NSW_0908_PFA	0.05	0.14	1.98	2.12	3.03	0.14	0.30	0.02	<0.02	<0.1	0.04	0.30	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	17 Nov 2020	0908_MW179_S_201117	Normal	NSW_0908_PFA	0.04	0.52	1.68	2.2	2.49	0.06	0.09	0.04	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	17 May 2021	0908_MW179S_210517	Normal	NSW_0908_PFA	0.34	0.26	4.84	5.1	7.44	0.16	0.38	0.05	<0.02	0.1	0.19	0.85	0.27	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	16 Nov 2021	0908_MW179S_211116	Normal	NSW_0908_PFA	0.29	0.14	1.19	1.33	2.39	0.04	0.08	0.02	<0.02	0.1	0.10	0.35	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	19 May 2022	0908_MW179S_220519	Normal	NSW_0908_PFA	0.44	0.22	1.67	1.89	3.04	0.05	0.09	0.02	<0.02	0.1	0.11	0.27	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW179S	10 Nov 2022	0908_MW179S_221110	Normal	NSW_0908_PFA	0.12	0.19	0.61	0.8	1.19	<0.02	0.02	<0.02	<0.02	<0.1	0.08	0.15	0.02	<0.02	<0.02	<0.02														

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																	
PFAS NEMP 2020 Drinking Water																																	
PFAS NEMP 2020 Freshwater 99%																																	
MW188S	21 May 2019	0908_MW188S_190521	Normal	NSW_0908_PFA	<0.01	0.19	0.04	0.23	0.23	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW188S	13 May 2020	0908_MW188S_200513	Normal	NSW_0908_PFA	0.08	3.14	0.66	3.8	4.40	0.10	0.09	0.07	<0.02	<0.1	0.04	0.18	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW188S	12 May 2021	0908_MW188S_210512	Normal	NSW_0908_PFA	0.09	2.93	0.82	3.75	4.50	0.12	0.09	0.09	<0.02	<0.1	0.07	0.24	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW188S	31 May 2022	0908_MW188S_220531	Normal	NSW_0908_PFA	<0.01	0.02	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW188S	11 May 2023	0908_MW188S_230511	Normal	NSW_0908_PFA	<0.01	0.02	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	27 Jan 2016	MW195_27012016	Normal	NSW_0908_PFA	<0.01	<0.01	0.07	0.13	0.13	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	09 Feb 2017	MW195_GW_09022017	Normal	NSW_0908_PFA	<0.01	<0.01	0.07	0.13	0.13	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	27 Mar 2018	MW195_GW_27032018	Normal	NSW_0908_PFA	0.02	0.17	0.16	0.33	0.46	0.02	<0.02	<0.02	<0.02	<0.1	0.05	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	27 Nov 2018	0908_MW195_181127	Normal	NSW_0908_PFA	0.01	0.06	0.22	0.28	0.39	0.02	<0.02	<0.02	<0.02	<0.1	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	27 May 2019	0908_MW195_190527	Normal	NSW_0908_PFA	0.01	0.05	0.18	0.23	0.29	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	13 May 2020	0908_MW195_200513	Normal	NSW_0908_PFA	0.02	0.08	0.22	0.3	0.42	0.03	<0.02	<0.02	<0.02	<0.1	0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	12 May 2021	0908_MW195_210512	Normal	NSW_0908_PFA	<0.01	0.05	0.07	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	16 May 2022	0908_MW195_220516	Normal	NSW_0908_PFA	0.01	0.05	0.09	0.14	0.17	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW195	09 May 2023	0908_MW195_230509	Normal	NSW_0908_PFA	0.01	0.10	0.10	0.2	0.21	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW196	13 Jan 2016	MW196_13012016	Normal	NSW_0908_PFA	0.68	35.6	11.9	47.5	-	0.18	-	-	<0.02	-	0.88	0.22	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
MW196	05 Sep 2016	MW196_050916	Normal	NSW_0908_PFA	0.17	18	1.8	19.8	-	0.04	-	-	<0.01	<0.05	0.04	0.22	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW196	15 Sep 2016	MW196_150916	Normal	NSW_0908_PFA	0.19	15	1.3	16.3	-	0.035	0.052	0.15	<0.01	<0.5	0.03	0.17	0.037	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW196	18 Jan 2017	MW196_GW_18012017	Normal	NSW_0908_PFA	0.42	22.3	2.67	24.97	26.6	0.12	0.17	0.29	<0.02	<0.1	0.1	0.39	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	18 Jan 2017	MW196_GW_18012017	Normal	NSW_0908_PFA	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW196	20 Apr 2018	MW196_GW_20042018	Normal	NSW_0908_PFA	0.24	19	2.35	21.4	22.4	0.04	0.08	0.19	<0.02	<0.1	0.08	0.32	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	20 Apr 2018	MW196_GW_20042018	Normal	NSW_0908_PFA	-	-	-	21.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW196	30 Nov 2018	0908_MW196_181130	Normal	NSW_0908_PFA	0.05	6.94	1.03	7.97	8.24	<0.02	0.02	0.05	<0.02	<0.1	0.03	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	29 May 2019	0908_MW196_190529	Normal	NSW_0908_PFA	0.22	13.7	2.54	16.2	17.1	0.04	0.08	0.15	<0.02	<0.1	0.05	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	29 May 2019	0908_MW196_190529	Normal	NSW_0908_PFA	-	-	-	16.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MW196	06 Nov 2019	0908_MW196_191107	Normal	NSW_0908_PFA	0.32	13.6	3.04	16.6	17.8	0.04	0.08	0.22	<0.02	<0.1	0.08	0.39	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	22 May 2020	0908_MW196_200522	Normal	NSW_0908_PFA	0.35	17.2	3.30	20.5	21.9	0.04	0.09	0.25	<0.02	<0.1	0.10	0.50	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	26 Nov 2020	0908_MW196_201126	Normal	NSW_0908_PFA	0.13	9.81	1.70	11.5	12.2	0.02	0.06	0.11	<0.02	<0.1	0.05	0.26	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	26 Nov 2020	0908_QC105_201126	Field_D	NSW_0908_PFA	0.07	2.46	1.43	3.89	4.47	0.06	0.13	0.10	<0.02	<0.1	0.04	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
MW196	26 Nov 2020	0908_QC205_201126	Interlab_D	NSW_0908_PFA	0.049	1.7	1.4	3.1	-	0.048	0.083	0.053	<0.01	<0.05	0.035	0.11	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW196	19 May 2021	0908_MW196_210519	Normal	NSW_0908_PFA	0.19	19.8	1.77	21.6	22.3	0.02	0.05	0.16	<0.02	<0.1	0.04	0.26	0.04	<0.02	<0.02	<0.02	<0.02												



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001						
PFAS NEMP 2020 Drinking Water					0.56		0.07																													
PFAS NEMP 2020 Freshwater 99%					19	0.00023																														
MW202S	18 Jan 2017	MW202S_GW_18012017	Normal	NSW_0908_PFAS	0.02	0.45	0.23	0.68	0.76	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	18 Jan 2017	QC113_180117	Field_D	ACTNSW_Hist_202012-3	0.03	0.76	0.2	0.96	-	<0.01	-	-	<0.01	<0.05	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05		
MW202S	15 Feb 2017	MW202S_150217	Normal	ACTNSW_Hist_202012-3	0.02	0.53	0.13	0.66	-	<0.01	-	-	<0.01	<0.05	0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-		
MW202S	15 Feb 2017	MW202S_150217	Normal	NSW_0908_PFAS	0.02	0.53	0.13	0.66	-	<0.01	-	-	<0.01	<0.05	0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-		
MW202S	15 Feb 2017	QC118_150217	Field_D	ACTNSW_Hist_202012-3	0.02	0.6	0.09	0.69	-	<0.01	-	-	<0.01	<0.05	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-		
MW202S	05 May 2017	MW202S_050517	Normal	ACTNSW_Hist_202012-3	0.02	0.69	0.35	1.04	-	0.02	0.03	0.02	<0.01	<0.05	0.02	0.06	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW202S	04 Apr 2018	MW202S_GW_04042018	Normal	NSW_0908_PFAS	<0.01	0.15	0.05	0.2	0.3	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05		
MW202S	22 Nov 2018	0908_MW202S_181122	Normal	NSW_0908_PFAS	<0.01	0.8	0.16	0.96	0.96	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	30 May 2019	0908_MW202S_190530	Normal	NSW_0908_PFAS	0.01	1.38	0.08	1.46	1.47	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	08 Nov 2019	0908_MW202S_191108	Normal	NSW_0908_PFASOMP	0.01	0.81	0.14	0.95	0.96	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	24 May 2021	0908_MW202S_210524	Normal	NSW_0908_PFASOMP	<0.01	0.61	0.30	0.91	0.94	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	10 Nov 2021	0908_MW202S_211110	Normal	NSW_0908_PFASOMP	0.02	0.34	0.11	0.45	0.55	<0.02	<0.02	<0.02	<0.02	<0.1	0.03	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	19 May 2022	0908_MW202S_220519	Normal	NSW_0908_PFASOMP	0.01	0.65	0.41	1.06	1.17	<0.02	0.02	<0.02	<0.02	<0.1	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	19 May 2022	0908_QC112_220519	Field_D	NSW_0908_PFASOMP	0.01	0.71	0.41	1.12	1.22	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	10 Nov 2022	0908_MW202S_221110	Normal	NSW_0908_PFASOMP	0.02	0.44	0.34	0.78	0.85	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	10 May 2023	0908_MW202S_230510	Normal	NSW_0908_PFASOMP_23	<0.01	0.20	0.10	0.3	0.30	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW208	27 Jan 2016	MW208_27012016	Normal	NSW_0908_PFAS	0.1	13.2	-	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	27 Jan 2016	QC114_WG_27012016	Interlab_D	NSW_0908_PFAS	0.082	12	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW208	26 Aug 2016	MW208_260816	Normal	NSW_0908_PFAS	0.23	13	2.8	15.8	-	0.16	-	-	<0.01	0.1	0.22	2.2	0.34	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	<0.05	-		
MW208	18 Oct 2016	MW208_181016	Normal	NSW_0908_PFAS	0.2	12	11	23	-	0.1	-	-	<0.01	0.06	0.12	0.97	0.62	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	
MW208	18 Oct 2016	QC103_181016	Field_D	NSW_0908_PFAS	0.17	10	9.4	19.4	-	0.1	-	-	<0.01	<0.05	0.11	0.79	0.48	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	
MW208	17 Jan 2017	MW208_170117	Normal	ACTNSW_Hist_202012-3	0.35	13	4.1	17.1	-	0.05	-	-	<0.01	0.07	0.06	0.44	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	
MW208	17 Jan 2017	MW208_170117	Normal	NSW_0908_PFAS	0.35	13	4.1	17.1	-	0.05	-	-	<0.01	0.07	0.06	0.44	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	
MW208	19 Jan 2017	MW208_GW_170119	Normal	NSW_0908_PFAS	0.32	8.8	7.72	16.5	18.1	0.13	0.16	0.28	<0.02	<0.1	0.1	0.53	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW208	19 Jan 2017	MW208_GW_170119	Normal	NSW_0908_PFAS	-	-	-	16.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW208	09 May 2017	MW208_090517	Normal	ACTNSW_Hist_202012-3	0.92	17	5.7	22.7	-	0.11	0.18	0.34	<0.01	0.22	0.3	0.84	0.34	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW208	28 May 2019	0908_MW208_190528	Normal	NSW_0908_PFAS	0.12	8.37	1.94	10.3	11	0.02	0.04	0.21	<0.02	<0.1	0.05	0.19	0.06</																			

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides																			
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)										
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L									
LOR					0.0005	0.0002	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56			0.07																																				
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																						



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBS)	Perfluoropentanoic acid (PFPeS)	Perfluoroheptanoic acid (PFHpS)	Perfluorodecanoic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR					0.0005	0.0002	0.0005	0.0002												0.001	0.001	0.001	0.001	0.0005	0.001											
PFAS NEMP 2020 Drinking Water					0.56		0.07																													
PFAS NEMP 2020 Freshwater 99%					19	0.00023																														
MW212	28 May 2019	0908_MW212_190528	Normal	NSW_0908_PFAS	0.02	4.46	0.22	4.68	4.74	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW212	08 Nov 2019	0908_MW212_191108	Normal	NSW_0908_PFASOMP	0.01	1.25	0.14	1.39	1.42	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW212	12 May 2020	0908_MW212_200512	Normal	NSW_0908_PFASOMP	<0.01	0.81	0.09	0.9	0.92	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	17 Nov 2020	0908_MW212_201117	Normal	NSW_0908_PFASOMP	<0.01	0.44	0.04	0.48	0.48	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	14 May 2021	0908_MW212_210514	Normal	NSW_0908_PFASOMP	<0.01	0.14	0.02	0.16	0.16	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	08 Nov 2021	0908_MW212_211108	Normal	NSW_0908_PFASOMP	0.02	0.13	0.18	0.31	0.39	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW212	24 May 2022	0908_MW212_220524	Normal	NSW_0908_PFASOMP	<0.01	0.63	0.02	0.65	0.65	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW212	11 Nov 2022	0908_MW212_221111	Normal	NSW_0908_PFASOMP	<0.01	0.24	0.01	0.25	0.25	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW212	08 May 2023	0908_MW212_230508	Normal	NSW_0908_PFASOMP_23	<0.01	0.44	0.06	0.5	0.50	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW229D	07 Mar 2017	MW229D_GW_070317	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW229D	26 Mar 2018	MW229D_GW_26032018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW229D	06 Dec 2018	0908_MW229D_181206	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229D	24 May 2019	0908_MW229D_190524	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229D	13 May 2020	0908_MW229D_200513	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229D	19 May 2021	0908_MW229D_210519	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	07 Mar 2017	MW229S_GW_070317	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	26 Mar 2018	MW229S_GW_26032018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	04 Dec 2018	0908_MW229S_181206	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	24 May 2019	0908_MW229S_190524	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	13 May 2020	0908_MW229S_200513	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW229S	19 May 2021	0908_MW229S_210519	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW230S	15 Mar 2017	MW230S_GW_150317	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW230S	15 Mar 2017	QC704_150317	Field_D	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW230S	03 Jun 2019	0908_MW230S_190603	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW230S	14 Nov 2019	0908_MW230S_191114	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0																								





Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																	
PFAS NEMP 2020 Drinking Water																																	
PFAS NEMP 2020 Freshwater 99%																																	
MW238S	10 May 2021	0908_MW238S_210510	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW238S	11 Nov 2021	0908_MW238S_211111	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW238S	16 May 2022	0908_MW238S_220516	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW238S	14 Nov 2022	0908_MW238S_221114	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW238S	15 May 2023	0908_MW238S_230515	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	20 Mar 2017	MW240D_GW_200317	Normal	NSW_0908_PFAASOMP	<0.01	0.02	0.14	0.18	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	19 Apr 2018	MW240D_GW_19042018	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.18	0.18	0.3	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	19 Apr 2018	MW240D_GW_19042018	Normal	NSW_0908_PFAASOMP	-	-	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW240D	19 Apr 2018	QC104_GW_19042018	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	0.18	0.18	0.31	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	19 Apr 2018	QC104_GW_19042018	Field_D	NSW_0908_PFAASOMP	-	-	-	0.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW240D	19 Apr 2018	QC204_GW_19042018	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	0.1	0.12	-	0.023	0.022	<0.01	<0.01	<0.05	<0.02	0.035	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW240D	22 Nov 2018	0908_MW240D_181122	Normal	NSW_0908_PFAASOMP	0.02	<0.01	0.28	0.28	0.48	0.04	0.06	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	22 Nov 2018	0908_MW240D_181122	Normal	NSW_0908_PFAASOMP	-	-	-	0.29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW240D	23 Jan 2019	0908_MW240D_190123	Normal	NSW_0908_PFAASOMGMT	0.03	<0.01	0.45	0.45	0.74	0.08	0.07	<0.02	<0.02	<0.02	<0.02	0.08	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	31 May 2019	0908_MW240D_190531	Normal	NSW_0908_PFAASOMP	0.06	0.02	0.51	0.53	0.78	0.04	0.06	<0.02	<0.02	<0.02	<0.02	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	23 Oct 2019	0908_MW240D_191023	Normal	NSW_0908_PFAASOMGMT	0.09	0.09	0.55	0.64	0.99	0.05	0.06	<0.02	<0.02	<0.02	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	06 Nov 2019	0908_MW240D_191107	Normal	NSW_0908_PFAASOMP	0.07	0.02	0.49	0.51	0.71	0.04	0.05	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	15 May 2020	0908_MW240D_200515	Normal	NSW_0908_PFAASOMP	0.07	0.05	0.51	0.56	0.78	0.04	0.05	<0.02	<0.02	<0.02	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	16 Nov 2020	0908_MW240D_201116	Normal	NSW_0908_PFAASOMP	0.04	0.04	0.34	0.38	0.54	0.03	0.04	<0.02	<0.02	<0.02	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	26 May 2022	0908_MW240D_220526	Normal	NSW_0908_PFAASOMP	0.06	0.04	0.40	0.44	0.60	0.02	0.04	<0.02	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	26 May 2022	0908_QC215_220526	Interlab_D	NSW_0908_PFAASOMP	0.05	0.03	0.32	0.35	0.50	0.02	0.03	0.01	<0.02	<0.02	<0.02	0.03	0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	10 Nov 2022	0908_MW240D_221110	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.06	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	10 Nov 2022	0908_QC101_221110	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	0.09	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW240D	10 Nov 2022	0908_QC201_221110	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.01	0.07	0.07	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW240D	10 May 2023	0908_MW240D_230510	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.08	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW241D	08 Feb 2017	MW241D_GW_08022017	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW241D	27 Apr 2018	MW241D_GW_27042018	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW241D	27 Nov 2018	0908_MW241D_181127	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW241D	24 May 2019	0908_MW241D_190524	Normal	NSW_0908_PFAASOMP	<0																												

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)								
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L					
LOR					0.0005	0.0002	0.0005	0.0002																													
PFAS NEMP 2020 Drinking Water					0.56		0.07																														
PFAS NEMP 2020 Freshwater 99%					19	0.00023																															
MW244D	10 Nov 2021	0908_MW244D_211110	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244D	30 May 2022	0908_MW244D_220530	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244D	09 Nov 2022	0908_MW244D_221109	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244D	10 May 2023	0908_MW244D_230510	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	09 Feb 2017	MW244S_GW_09022017	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.12	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	06 Nov 2019	0908_MW244S_191107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	13 May 2020	0908_MW244S_200513	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.05	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	07 Dec 2020	0908_MW244_S_201207	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	24 May 2021	0908_MW244S_210524	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	10 Nov 2021	0908_MW244S_211110	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	10 Nov 2021	0908_QC103_211110	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	30 May 2022	0908_MW244S_220530	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.04	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	30 May 2022	0908_QC217_220530	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.01	0.04	0.04	0.04	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW244S	09 Nov 2022	0908_MW244S_221109	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW244S	10 May 2023	0908_MW244S_230510	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	07 Mar 2017	MW245D_GW_070317	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	07 Mar 2017	QC703_GW_070317	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	29 May 2019	0908_MW245D_190529	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	15 May 2020	0908_MW245D_200515	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	24 May 2021	0908_MW245D_210524	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	24 May 2021	0908_QC107_210524	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	24 May 2021	0908_QC207_210524	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	
MW245D	30 May 2022	0908_MW245D_220530	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW245D	10 May 2023	0908_MW245D_230510	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1</																							











Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water					0.56		0.07																											
PFAS NEMP 2020 Freshwater 99%					19	0.00023																												
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.1 PFOA	Normal	NSW_0908_PFAAS	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.1 PFOS	Normal	NSW_0908_PFAAS	-	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.03 PFOA	Normal	NSW_0908_PFAAS	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.3 PFOA	Normal	NSW_0908_PFAAS	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.03 PFOS	Normal	NSW_0908_PFAAS	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.10.3 PFOS	Normal	NSW_0908_PFAAS	-	0.12	-	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.11 PFOA	Normal	NSW_0908_PFAAS	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.11 PFOS	Normal	NSW_0908_PFAAS	-	0.46	-	0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.13 PFOA	Normal	NSW_0908_PFAAS	1.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.13 PFOS	Normal	NSW_0908_PFAAS	-	1.57	-	1.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.110 PFOA	Normal	NSW_0908_PFAAS	5.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.110 PFOS	Normal	NSW_0908_PFAAS	-	5.3	-	5.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.130 PFOA	Normal	NSW_0908_PFAAS	36.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.130 PFOS	Normal	NSW_0908_PFAAS	-	18	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.1100 UG/L PFOA	Normal	NSW_0908_PFAAS	113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	20 Feb 2017	MW279D_LT_2.7-5.1100 UG/L PFOS	Normal	NSW_0908_PFAAS	-	70.3	-	70.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW279S	06 Mar 2017	MW279S_GW_060317	Normal	NSW_0908_PFAAS	0.01	0.05	1.17	1.22	1.71	0.06	0.11	<0.02	<0.02	<0.1	0.02	0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	13 Apr 2018	MW279S_GW_13042018	Normal	NSW_0908_PFAAS	0.04	0.24	1.43	1.67	2.46	0.04	0.12	<0.02	<0.02	<0.1	0.04	0.55	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	26 Nov 2018	0908_MW279S_181126	Normal	NSW_0908_PFAAS	0.02	0.11	1.56	1.67	2.16	0.06	0.09	<0.02	<0.02	<0.1	<0.02	0.3	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	27 May 2019	0908_MW279S_190527	Normal	NSW_0908_PFAAS	0.02	0.2	1.25	1.45	1.95	0.05	0.1	<0.02	<0.02	<0.1	0.03	0.3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	08 Nov 2019	0908_MW279S_191108	Normal	NSW_0908_PFAASOMP	0.04	0.18	2.16	2.34	3.26	0.08	0.15	<0.02	<0.02	<0.1	0.06	0.56	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	18 May 2020	0908_MW279S_200518	Normal	NSW_0908_PFAASOMP	0.04	0.45	2.63	3.08	3.84	0.08	0.18	0.04	<0.02	<0.1	<0.02	0.39	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	25 Nov 2020	0908_MW279S_201125	Normal	NSW_0908_PFAASOMP	0.02	0.35	1.20	1.55	2.00	0.05	0.08	0.02	<0.02	<0.1	<0.02	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	20 May 2021	0908_MW279S_210520	Normal	NSW_0908_PFAASOMP	0.03	0.72	1.95	2.67	3.60	0.12	0.15	0.04	<0.02	<0.1	0.05	0.52	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	11 Nov 2021	0908_MW279S_211111	Normal	NSW_0908_PFAASOMP	0.01	0.46	0.93	1.39	1.72	0.05	0.05	<0.02	<0.02	<0.1	<0.02	0.22	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	19 May 2022	0908_MW279S_220519	Normal	NSW_0908_PFAASOMP	0.01	0.32	0.88	1.2	1.55	0.04	0.06	<0.02	<0.02	<0.1	0.02	0.22	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	07 Nov 2022	0908_MW279S_221107	Normal	NSW_0908_PFAASOMP	0.01	0.18	0.53	0.71	0.93	0.04	0.05	<0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW279S	09 May 2023	0908_MW279S_230509	Normal	NSW_0908_PFAASOMP_23	0.03	0.38	1.98	2.36	3.20	0.12	0.16	0.03	<0.02	<0.1	0.06	0.42	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW280S	03 Mar 2017	MW280_LT_3.0-4.00.1 PFOA	Normal	NSW_0908_PFAAS	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.00.1 PFOS	Normal	NSW_0908_PFAAS	-	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.00.03 PFOA	Normal	NSW_0908_PFAAS	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.00.3 PFOS	Normal	NSW_0908_PFAAS	-	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.00.3 PFOA	Normal	NSW_0908_PFAAS	-	0.13	-	0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.01 PFOA	Normal	NSW_0908_PFAAS	0.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.01 PFOS	Normal	NSW_0908_PFAAS	-	0.52	-	0.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW280S	03 Mar 2017	MW280_LT_3.0-4.03 P																																



Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)				
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR																																						
PFAS NEMP 2020 Drinking Water																																						
PFAS NEMP 2020 Freshwater 99%																																						
MW280S	03 Mar 2017	MW280_LT_3.0-4.03 PFOS	Normal	NSW_0908_PFAAS	-	1.24	-	1.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
MW280S	03 Mar 2017	MW280_LT_3.0-4.010 PFOA	Normal	NSW_0908_PFAAS	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
MW280S	03 Mar 2017	MW280_LT_3.0-4.010 PFOS	Normal	NSW_0908_PFAAS	-	4.62	-	4.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW280S	03 Mar 2017	MW280_LT_3.0-4.030 PFOA	Normal	NSW_0908_PFAAS	31.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW280S	03 Mar 2017	MW280_LT_3.0-4.030 PFOS	Normal	NSW_0908_PFAAS	-	13	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW280S	03 Mar 2017	MW280_LT_3.0-4.0100 UG/L PFOA	Normal	NSW_0908_PFAAS	92.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW280S	03 Mar 2017	MW280_LT_3.0-4.0100 UG/L PFOS	Normal	NSW_0908_PFAAS	-	39.9	-	39.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
MW280S	08 Mar 2017	MW280S_GW_080317	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	07 Aug 2018	0908_MW280_180807	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	07 Sep 2018	0908_MW280D_180907	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	05 Oct 2018	0908_MW280S_181005	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	23 Jan 2019	0908_MW280S_190123	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	29 Mar 2019	0908_MW280S_190329	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	19 Jun 2019	0908_MW280_190618	Normal	NSW_0908_PFAASMGMT	<0.002	<0.002	0.004	0.004	0.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.196	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	
MW280S	25 Sep 2019	0908_MW280S_190925	Normal	NSW_0908_PFAASMGMT	0.0009	0.0012	0.0036	0.0048	0.0069	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
MW280S	02 Dec 2019	0908_MW280S_191202	Normal	NSW_0908_PFAAS	0.0008	0.0017	0.0035	0.0052	0.0076	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001
MW280S	02 Dec 2019	0908_QC103_191202	Field_D	NSW_0908_PFAAS	0.0009	0.0020	0.0036	0.0056	0.0086	0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	
MW280S	02 Dec 2019	0908_QC203_191202	Interlab_D	NSW_0908_PFAAS	<0.001	0.0024	0.0035	0.0059	-	<0.001	<0.001	<0.001	<0.001	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
MW280S	12 Mar 2020	0908_MW280S_200312	Normal	NSW_0908_PFAASMGMT	0.0010	0.0117	0.0031	0.0148	0.0164	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	
MW280S	17 Apr 2020	0908_MW280S_200417	Normal	NSW_0908_PFAASMGMT	0.0009	<0.0003	0.0035	0.0035	0.0463	0.0061	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0016	0.0018	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.034	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001
MW280S	23 Jun 2020	0908_MW280S_200623	Normal	NSW_0908_PFAASMGMT	<0.002	<0.002	0.004	0.004	0.004	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW280S	01 Oct 2020	0908_MW280S_201001	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW280S	01 Oct 2020	0908_MW280S_201001	Normal	NSW_0908_PFAASMGMT	<0.002	<0.002	0.003	0.003	0.015	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.012	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW280S	11 Jan 2021	0908_MW280S_210111	Normal	NSW_0908_PFAASMGMT	0.0022	0.0372	0.0103	0.0475	0.0631	0.0020	0.0011	<0.0005	<0.0005	<0.002	<0.0005	<0.0005	0.0033	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.007	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001
MW280S	22 Jan 2021	0908_MW280S_210122	Normal	NSW_0908_PFAASMGMT	0.0007	0.0																																

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides																				
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)												
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L											
LOR					0.0005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001		
PFAS NEMP 2020 Drinking Water					0.56		0.07																																						
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																							
MW281S	10 May 2023	0908_QC217_230510	Interlab_D	NSW_0908_PFASOMP_23	1.6	73	20	93	110	1.1	2.2	2.9	<0.02	0.33	0.61	3.5	0.68	0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW282S	20 Mar 2017	MW282S_GW_200317	Normal	NSW_0908_PFAS	1.23	1.48	12.8	14.28	20.1	0.77	0.83	1.26	<0.02	<0.1	0.23	1.21	0.25	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW282S	20 Mar 2017	MW282S_GW_200317	Normal	NSW_0908_PFAS	-	-	-	14.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW282S	20 Jun 2019	0908_MW282_190620	Normal	NSW_0908_PFASMGMT	2.15	9.94	23.1	33	45.2	0.87	1.21	2.97	<0.02	0.3	0.58	3.44	0.62	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	23 Oct 2019	0908_MW282S_191023	Normal	NSW_0908_PFASMGMT	3.41	54.7	16.0	70.7	86.6	0.86	1.43	5.15	<0.02	0.3	0.58	3.53	0.63	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	06 Nov 2019	0908_MW282S_191107	Normal	NSW_0908_PFASOMP	1.95	1.09	19.7	20.8	33.1	1.08	1.80	1.73	<0.02	0.3	0.64	4.13	0.68	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	15 May 2020	0908_MW282S_200515	Normal	NSW_0908_PFASOMP	3.29	35.8	13.3	49.1	64.8	1.13	1.33	5.01	<0.02	0.2	0.66	3.62	0.47	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	15 May 2020	0908_QC108_200515	Field_D	NSW_0908_PFASOMP	3.39	39.7	14.2	53.9	70.2	1.13	1.47	5.37	<0.02	0.3	0.67	3.51	0.48	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	16 Nov 2020	0908_MW282_S_201116	Normal	NSW_0908_PFASOMP	0.03	0.15	0.73	0.88	1.50	0.17	0.17	0.04	<0.02	<0.1	0.03	0.18	0.48	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	16 Nov 2020	0908_QC100_201116	Field_D	NSW_0908_PFASOMP	0.05	0.16	0.81	0.97	1.70	0.18	0.18	0.05	<0.02	<0.1	0.04	0.23	0.48	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	16 Nov 2020	0908_QC200_201116	Interlab_D	NSW_0908_PFASOMP	0.039	0.14	0.86	1	-	0.17	0.16	0.027	<0.01	<0.05	0.035	0.18	0.015	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW282S	25 May 2021	0908_MW282S_210525	Normal	NSW_0908_PFASOMP	0.06	0.95	0.93	1.88	2.65	0.14	0.13	0.09	<0.02	<0.1	0.12	0.23	0.48	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	10 Nov 2021	0908_MW282S_211110	Normal	NSW_0908_PFASOMP	0.28	1.48	9.48	11	16.0	0.80	0.70	0.34	<0.02	0.1	0.32	2.25	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	26 May 2022	0908_MW282S_220526	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.27	0.3	0.41	0.03	0.03	<0.02	<0.02	<0.1	<0.02	0.05	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
MW282S	26 May 2022	0908_QC115_220526	Field_D	NSW_0908_PFASOMP	<0.01	0.04	0.37	0.41	0.56	0.04	0.04	<0.02	<0.02	<0.1	<0.02	0.07	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	10 Nov 2022	0908_MW282S_221110	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.08	0.11	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	10 May 2023	0908_MW282S_230510	Normal	NSW_0908_PFASOMP_23	0.07	0.14	3.33	3.47	4.49	0.09	0.15	0.08	<0.02	<0.1	0.09	0.45	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW282S	10 May 2023	0908_QC117_230510	Field_D	NSW_0908_PFASOMP_23	0.07	0.12	3.27	3.39	4.49	0.14	0.15	<0.02	<0.02	<0.1	0.12	0.52	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW315D	26 Sep 2019	0908_MW315D_190926	Normal	NSW_0908_PFASMGMT	<0.0005	<0.0003	0.0219	0.0219	0.0702	0.0180	0.0074	<0.0005	<0.0005	<0.002	0.0032	0.0197	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001	<0.0005	<0.001		
MW315D	19 Nov 2019	0908_MW315D_191119	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05																		

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR					0.0005	0.0002	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%					19	0.00023																															
MW315S	30 Jun 2022	0908_MW315S_220630	Normal	NSW_0908_PFAASMGMT	0.005	0.003	0.024	0.027	0.073	0.002	0.002	<0.002	<0.002	0.03	<0.002	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW315S	16 Sep 2022	0908_MW315S_220916	Normal	NSW_0908_PFAASMGMT	0.003	0.003	0.025	0.028	0.111	0.002	0.003	<0.002	<0.002	0.06	<0.002	0.015	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW315S	16 Sep 2022	0908_QC203_220916	Interlab_D	NSW_0908_PFAASMGMT	0.004	0.002	0.019	0.021	0.084	0.003	0.003	<0.001	<0.002	0.037	0.004	0.01	0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	
MW315S	11 Nov 2022	0908_MW315S_221111	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW315S	18 May 2023	0908_MW315S_230518	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	01 Nov 2019	0908_MW316D_191101	Normal	NSW_0908_PFAASOMP	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.12	<0.05	
MW316D	18 May 2020	0908_MW316D_200518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	25 Nov 2020	0908_MW316D_D_201125	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	20 May 2021	0908_MW316D_210520	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	11 Nov 2021	0908_MW316D_211111	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	20 May 2022	0908_MW316D_220520	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	07 Nov 2022	0908_MW316D_221107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW316D	09 May 2023	0908_MW316D_230509	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317D	26 Jun 2020	0908_MW317D_200626	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317D	24 May 2021	0908_MW317D_210524	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317D	30 May 2022	0908_MW317D_220530	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317D	12 May 2023	0908_MW317D_230512	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317S	26 Jun 2020	0908_MW317S_200626	Normal	NSW_0908_PFAASOMP	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317S	24 May 2021	0908_MW317S_210524	Normal	NSW_0908_PFAASOMP	<0.01	0.04	0.10	0.14	0.14	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317S	18 Nov 2021	0908_MW317S_211118	Normal	NSW_0908_PFAASOMP	<0.01	0.07	0.02	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW317S	18 Nov 2021	0908_QC102_211118	Field_D	NSW_0908_PFAASOMP	<0.01	0.08	0.02	0.1	0.10	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW317S	30 May 2022	0908_MW317S_220530	Normal	NSW_0908_PFAASOMP	<0.01	0.03	0.03	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05</			

Table T9 - Groundwater Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR					0.0005	0.0002	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56		0.07																														
PFAS NEMP 2020 Freshwater 99%					19	0.00023																															
MW406	08 May 2023	0908_QC100_230508	Field_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW406	08 May 2023	0908_QC200_230508	Interlab_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.04	0.04	0.04	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	
MW466	18 Jun 2014	W66	Normal	ACTNSW_Hist_202012-3	1.4	29.1	-	29.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	
MW466	11 Aug 2014	W66_11082014	Normal	NSW_0908_PFAAS	0.69	<0.01	0.03	13.03	-	3.9	-	-	<0.01	-	0.61	6.7	0.03	0.03	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	-	-	<0.05	-	-	
MW466	11 Aug 2014	W66_11082014	Normal	NSW_0908_PFAAS	-	13	-	13	-	-	-	-	-	-	-	1.7	-	0.03	0.03	-	-	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-	
MW466	29 Aug 2016	QC104_2908016	Field_D	ACTNSW_Hist_202012-3	1.33	31.8	10.5	42.3	51.9	1	1.13	1.07	<0.02	0.4	1.01	3.12	0.51	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	29 Aug 2016	W66_290816	Normal	NSW_0908_PFAAS	0.77	26	7.3	33.3	-	0.57	-	-	<0.01	0.1	0.3	1.9	0.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	-	<0.05	-	-	
MW466	19 Oct 2016	W66_191016	Normal	NSW_0908_PFAAS	0.58	33	5.9	38.9	-	0.41	-	-	<0.01	0.14	0.15	1.1	0.17	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	-	
MW466	20 Dec 2016	QC800_GW_201216	Interlab_D	NSW_0908_PFAAS	0.4	31	2.3	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	
MW466	20 Dec 2016	W66_GW_20122016	Normal	NSW_0908_PFAAS	0.5	32	3.24	35.2	37.7	0.17	0.22	0.4	<0.02	<0.1	0.2	0.84	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	20 Dec 2016	W66_GW_20122016	Normal	NSW_0908_PFAAS	-	-	-	35.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW466	12 Jan 2017	W66_120117	Normal	ACTNSW_Hist_202012-3	0.61	50	3.2	53.2	-	0.2	-	-	<0.01	0.13	0.17	1.1	0.12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	-	<0.05	-	<0.05	-	-	
MW466	24 Jan 2017	W66_24012017	Normal	NSW_0908_PFAAS	0.69	52.9	4.78	57.68	61.2	0.24	0.32	0.57	<0.02	<0.1	0.33	1.23	0.19	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	24 Jan 2017	W66_24012017	Normal	NSW_0908_PFAAS	-	-	-	57.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW466	02 May 2017	W66_020517	Normal	ACTNSW_Hist_202012-3	0.17	9.5	3	12.5	-	0.17	0.22	0.21	<0.01	0.05	0.09	0.37	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW466	10 Jul 2017	W66	Normal	ACTNSW_Hist_202012-3	0.58	28.1	7.75	35.8	-	0.81	-	-	<0.1	0.2	1.12	0.2	-	-	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	
MW466	20 Apr 2018	W66_GW_20042018	Normal	NSW_0908_PFAAS	0.19	24	2.23	26.2	28	0.15	0.21	0.19	0.03	<0.1	0.17	0.8	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	20 Apr 2018	W66_GW_20042018	Normal	NSW_0908_PFAAS	-	-	-	26.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW466	22 Aug 2018	0908_W66_180822	Normal	NSW_0908_PFAASMGMT	0.33	14.7	6.50	21.2	25.2	0.53	0.71	0.34	<0.02	0.2	0.33	1.42	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	14 Sep 2018	0908_W66_180914	Normal	NSW_0908_PFAASMGMT	0.39	15.1	8.14	23.2	28.6	0.80	0.92	0.38	<0.02	<0.1	0.38	2.26	0.25	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	29 Nov 2018	0908_W66_181129	Normal	NSW_0908_PFAAS	0.2	14.8	2.45	17.2	18.7	0.17	0.18	0.18	<0.02	<0.1	0.16	0.52	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	29 Nov 2018	0908_W66_181129	Normal	NSW_0908_PFAAS	-	-	-	17.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW466	23 Apr 2019	0908_W66_190423	Normal	NSW_0908_PFAASMGMT	0.06	11.8	0.80	12.6	13.4	0.08	0.10	0.06	<0.02	<0.1	0.09	0.36	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	22 May 2019	0908_W66_190522	Normal	NSW_0908_PFAASMGMT	0.04	8.73	0.50	9.23	9.99	0.04	0.05	0.04	0.04	0.2	0.11	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	31 May 2019	0908_W66_190531	Normal	NSW_0908_PFAAS	0.05	9.65	0.65	10.3	11	0.04	0.05	0.04	0.05	<0.1	0.15	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	19 Jun 2019	0908_W66_190619	Normal	NSW_0908_PFAASMGMT	0.07	6.82	0.93	7.75	8.46	0.04	0.08	0.04	<0.02	<0.1	0.13	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW466	24 Sep 2019	0908_W66_190924	Normal	NSW_0908_PFAASMGMT	0.14	9.04	1.96	11	12.4	0.20	0.20	0.10	0.04	<0.1	0.23	0.43	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	



Table T9 - Groundwater Historical Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR	0.0005	0.0002	0.0005	0.0002																											
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																											
PFAS NEMP 2020 Freshwater 99%	19	0.00023																													
Location Code	Date	Field ID	Sample Type	Project ID	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW842	25 May 2021	0908_MW842_210525	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW842	02 Jun 2022	0908_MW842_220602	Normal	NSW_0908_PFASOMP	<0.01	<b>0.02</b>	<0.01	<b>0.02</b>	<b>0.02</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW842	18 May 2023	0908_MW842_230518	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	24 Mar 2017	SK3496_S_24032017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	22 May 2019	0908_SK3496_S_190522	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	25 May 2021	0908_MW844_210525	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	02 Jun 2022	0908_MW844_220602	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW844	18 May 2023	0908_MW844_230518	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	21 Oct 2015	BWS46_211015	Normal	NSW_0908_PFAS	<0.02	<0.02	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	
POT046	17 Jan 2017	BWS46_170117	Normal	NSW_0908_PFAS	<0.01	<b>0.08</b>	<b>0.03</b>	<b>0.11</b>	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	
POT046	06 Jun 2019	0908_BWS046_190606	Normal	NSW_0908_PFAS	<0.01	<b>0.04</b>	<b>0.02</b>	<b>0.06</b>	<b>0.06</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	28 May 2020	0908_POT046_200528	Normal	NSW_0908_PFASOMP	<0.01	<b>0.11</b>	<b>0.04</b>	<b>0.15</b>	<b>0.15</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	13 May 2021	0908_POT046_210513	Normal	NSW_0908_PFASOMP	<0.01	<b>0.05</b>	<b>0.04</b>	<b>0.09</b>	<b>0.09</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	27 May 2022	0908_POT046_220527	Normal	NSW_0908_PFASOMP	<0.01	<b>0.13</b>	<b>0.06</b>	<b>0.19</b>	<b>0.19</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT046	16 May 2023	0908_POT046_230516	Normal	NSW_0908_PFASOMP_23	<0.01	<b>0.06</b>	<b>0.02</b>	<b>0.08</b>	<b>0.08</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT085	27 Oct 2015	BWS85_271015	Normal	NSW_0908_PFAS	<0.02	<0.02	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	
POT085	06 Dec 2016	BWS085_061216	Normal	NSW_0908_PFAS	<b>0.02</b>	<b>0.03</b>	<0.02	<b>0.03</b>	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	
POT085	18 Jun 2019	0908_BWS085_190618	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT085	28 May 2020	0908_POT085_200528	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT085	19 Nov 2021	0908_POT085_211119	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT085	16 May 2022	0908_POT085_220516	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT085	15 May 2023	0908_POT085_230515	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	27 Oct 2015	BWS87_271015	Normal	NSW_0908_PFAS	<0.02	<b>0.7</b>	-	<b>0.7</b>	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	
POT087	06 Dec 2016	BWS087_061216	Normal	NSW_0908_PFAS	<0.01	<b>1.15</b>	<0.02	<b>1.15</b>	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.15</b>	-	-	-	-	-	-	-	-	-	
POT087	14 Jun 2019	0908_BWS087_190614	Normal	NSW_0908_PFAS	<0.01	<b>0.4</b>	<b>0.09</b>	<b>0.49</b>	<b>0.49</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	08 Nov 2019	0908_POT087_191108	Normal	NSW_0908_PFASOMP	<0.01	<b>0.44</b>	<b>0.09</b>	<b>0.53</b>	<b>0.53</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	26 May 2020	0908_POT087_200526	Normal	NSW_0908_PFASOMP	<0.01	<b>0.48</b>	<b>0.08</b>	<b>0.56</b>	<b>0.56</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	10 May 2021	0908_POT087_210510	Normal	NSW_0908_PFASOMP	<0.01	<b>0.17</b>	<b>0.12</b>	<b>0.29</b>	<b>0.29</b>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
POT087	27 May 2022	0908_POT087_220527	Normal	NSW_0908_PFASOMP	<0.01	<b>0.26</b>																									

Table T9 - Groundwater Historical Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
LOR	0.0005	0.0002	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	<0.01	0.06	0.1	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	
POT236	27 Feb 2017	BWS236_270217	Normal	NSW_0908_PFAS	<0.01	0.06	0.1	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	
POT236	03 Jun 2019	0908_BWS236_190603	Normal	NSW_0908_PFAS	<0.01	0.03	0.06	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT236	28 May 2020	0908_POT236_200528	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.12	0.16	0.16	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT236	12 May 2021	0908_POT236_210512	Normal	NSW_0908_PFASOMP	<0.01	0.06	0.02	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT236	18 May 2022	0908_POT236_220518	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.04	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT236	16 May 2023	0908_POT236_230516	Normal	NSW_0908_PFASOMP_23	<0.01	0.03	0.01	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT257	07 Oct 2016	BWS257_071016	Normal	NSW_0908_PFAS	0.01	0.02	<0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-
POT257	01 Mar 2017	BWS257_010317	Normal	NSW_0908_PFAS	0.02	0.02	<0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-
POT257	25 May 2020	0908_POT257_200525	Normal	NSW_0908_PFASOMP	0.01	0.03	<0.02	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT257	13 May 2021	0908_POT257_210513	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT257	18 May 2022	0908_POT257_220518	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT257	16 May 2023	0908_POT257_230516	Normal	NSW_0908_PFASOMP_23	0.02	0.02	<0.01	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT382	12 Nov 2021	0908_POT382_211112	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT382	18 May 2022	0908_POT382_220518	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT382	14 Nov 2022	0908_POT382_221114	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
POT382	17 May 2023	0908_POT382_230517	Normal	NSW_0908_PFASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05

Notes  
LOR Limit of Reporting  
Normal Primary sample  
Field\_D Intra-laboratory duplicate sample  
Interlab\_D Inter-laboratory duplicate sample









Table T10 - Surface Water Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBS)	Perfluoropentanoic acid (PFPeS)	Perfluoroheptanoic acid (PFHpS)	Perfluorodecanoic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																
PFAS NEMP 2020 Drinking Water																																
PFAS NEMP 2020 Recreational Water																																
PFAS NEMP 2020 Freshwater 99%																																
SW001	19 Nov 2021	0908_QC114_211119	Field_D	NSW_0908_PFA_SOMP	0.05	2.3	0.53	<b>2.83</b>	3.19	0.07	0.03	0.05	<0.02	<0.1	0.03	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	19 Nov 2021	0908_SW001_211119	Normal	NSW_0908_PFA_SOMP	0.04	2.18	0.45	<b>2.63</b>	2.94	0.05	0.04	0.04	<0.02	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	18 May 2022	0908_SW001_220518	Normal	NSW_0908_PFA_SOMP	0.03	1.65	0.37	<b>2.02</b>	2.25	0.02	0.03	0.04	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	13 Jul 2022	0908_QC100_220713	Field_D	NSW_0908_PFA_SMGMT	0.01	0.63	0.11	<b>0.74</b>	0.78	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	13 Jul 2022	0908_SW001_220713	Normal	NSW_0908_PFA_SMGMT	0.01	0.59	0.11	<b>0.69</b>	0.73	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	11 Aug 2022	0908_SW001_2208111720	Normal	NSW_0908_PFA_SMGMT	0.01	0.83	0.21	<b>0.98</b>	1.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	11 Aug 2022	0908_SW001_2208111720	Normal	NSW_0908_PFA_SMGMT	-	-	-	<b>1.04</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW001	11 Aug 2022	0908_SW001_2208111721	Normal	NSW_0908_PFA_SMGMT	0.01	0.76	0.2	<b>0.92</b>	1.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	11 Aug 2022	0908_SW001_2208111721	Normal	NSW_0908_PFA_SMGMT	-	-	-	<b>0.96</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW001	08 Nov 2022	0908_SW001_221108	Normal	NSW_0908_PFA_SOMP	0.03	1.46	0.34	<b>1.8</b>	1.99	0.02	0.03	0.03	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW001	08 May 2023	0908_SW001_230508	Normal	NSW_0908_PFA_SOMP_23	0.04	2.16	0.41	<b>2.57</b>	2.80	<0.02	0.03	0.04	<0.02	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	18 Jun 2014	MD5_WATER	Normal	NSW_0908_PFA_S	0.01	0.03	0.15	<b>0.18</b>	-	0.02	-	-	<0.01	<0.1	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
SW005	25 Jan 2016	MD5_SW_2512016	Normal	NSW_0908_PFA_S	<0.01	0.04	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-		
SW005	20 Dec 2016	MD5_SW_161220	Normal	NSW_0908_PFA_S	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW005	02 Feb 2017	MD5_SW_020217	Normal	NSW_0908_PFA_S	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
SW005	09 Feb 2017	MD5_SW_090217	Normal	NSW_0908_PFA_S	<0.05	0.12	0.14	<b>0.26</b>	0.26	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	16 Feb 2017	MD5_SW_16022017	Normal	NSW_0908_PFA_S	<0.05	0.05	<0.05	0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	24 Feb 2017	MD5_SW_240217	Normal	NSW_0908_PFA_S	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	02 Mar 2017	MD5_SW_020317	Normal	NSW_0908_PFA_S	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	09 Mar 2017	MD5_SW_090317	Normal	NSW_0908_PFA_S	<0.05	0.05	<0.05	0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	17 Mar 2017	MD5_SW_170317	Normal	NSW_0908_PFA_S	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
SW005	23 Mar 2017	MD5_SW_23032017	Normal	NSW_0908_PFA_S	<0.01	0.17	0.08	<b>0.25</b>	0.25	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	30 Mar 2017	MD5_SW_300317	Normal	NSW_0908_PFA_S	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	06 Apr 2017	MD5_SW_060417	Normal	NSW_0908_PFA_S	0.03	0.84	0.38	<b>1.22</b>	1.38	0.02	0.03	0.03	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	04 May 2017	MD5_SW_040517	Normal	NSW_0908_PFA_S	0.05	1.94	0.92	<b>2.86</b>	-	0.05	0.08	0.09	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	01 Jun 2017	MD5_SW_010617	Normal	NSW_0908_PFA_S	<0.01	0.33	0.22	<b>0.55</b>	0.55	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	20 Jul 2017	MD5_SW_200717	Normal	NSW_0908_PFA_S	0.03	1.21	0.52	<b>1.73</b>	1.98	0.04	0.05	0.05	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	20 Jul 2017	QC418_SW_200717	Field_D	NSW_0908_PFA_S	0.03	1.21	0.54	<b>1.75</b>	1.98	0.03	0.05	0.04	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	20 Jul 2017	QC518_SW_200717	Interlab_D	NSW_0908_PFA_S	0.034	1.4	0.5	<b>1.9</b>	-	0.039	-	-	<0.02	<0.05	0.022	0.094	0.015	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
SW005	12 Apr 2018	MD5_SW_12042018	Normal	NSW_0908_PFA_S	<0.01	0.08	<																									









Table T10 - Surface Water Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water					0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.005	0.01	0.05	0.005	0.01	0.05	
PFAS NEMP 2020 Recreational Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					10			2																										
					19	0.00023																												
SW014	20 Dec 2016	MD14_SW_161220	Normal	NSW_0908_PFA	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	18 Apr 2018	MD14_SW_18042018	Normal	NSW_0908_PFA	<0.01	0.14	<0.02	0.16	0.14	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	18 Apr 2018	MD14_SW_18042018	Normal	NSW_0908_PFA	-	-	-	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW014	06 Dec 2018	0908_MD14_SW_181206	Normal	NSW_0908_PFA	0.02	0.45	0.21	0.66	0.76	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	13 Jun 2019	0908_MD14_SW_190613	Normal	NSW_0908_PFA	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	13 Jun 2019	0908_QC120_190613	Field_D	NSW_0908_PFA	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	13 Jun 2019	0908_QC220_190613	Interlab_D	NSW_0908_PFA	<0.01	<0.02	0.011	0.031	0.05	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW014	05 Nov 2019	0908_MD14_SW_191105	Normal	NSW_0908_PFA	<0.01	0.05	<0.02	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	04 Jun 2020	0908_SW014_200604	Normal	NSW_0908_PFA	0.03	1.32	0.62	1.94	2.32	0.06	0.07	0.05	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	26 Nov 2020	0908_QC110_201126	Field_D	NSW_0908_PFA	0.06	2.93	0.79	3.72	4.19	0.06	0.07	0.07	<0.02	<0.1	0.04	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	26 Nov 2020	0908_QC210_201126	Interlab_D	NSW_0908_PFA	0.053	2.5	0.74	3.24	-	0.054	0.059	0.049	<0.01	<0.05	0.042	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW014	26 Nov 2020	0908_SW014_201126	Normal	NSW_0908_PFA	0.06	3.24	0.77	4.01	4.50	0.06	0.07	0.06	<0.02	<0.1	0.05	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	11 May 2021	0908_SW014_210511	Normal	NSW_0908_PFA	0.01	0.61	0.2	0.81	0.86	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	17 Nov 2021	0908_SW014_211117	Normal	NSW_0908_PFA	0.02	0.91	0.34	1.25	1.46	0.06	0.02	0.03	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	16 May 2022	0908_QC201_220516	Interlab_D	NSW_0908_PFA	0.02	0.96	0.22	1.2	1.3	0.03	0.02	0.02	<0.02	<0.02	0.05	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	16 May 2022	0908_SW014_220516	Normal	NSW_0908_PFA	0.02	1	0.22	1.22	1.33	<0.02	0.02	0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	07 Nov 2022	0908_SW014_221107	Normal	NSW_0908_PFA	0.02	1.14	0.26	1.4	1.55	0.02	0.02	0.03	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW014	09 May 2023	0908_QC107_230509	Field_D	NSW_0908_PFA	0.03	1.36	0.42	1.78	2.01	0.02	0.03	0.04	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW014	09 May 2023	0908_SW014_230509	Normal	NSW_0908_PFA	0.03	1.47	0.39	1.86	2.11	0.03	0.03	0.04	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	30 Jan 2017	TC12_SW_300117	Normal	NSW_0908_PFA	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	09 Feb 2017	TC12_SW_090217	Normal	NSW_0908_PFA	<0.01	0.27	0.17	0.44	0.46	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	16 Feb 2017	TC12_SW_16022017	Normal	NSW_0908_PFA	<0.01	0.02	0.02	0.04	0.04	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	24 Feb 2017	TC12_SW_240217	Normal	NSW_0908_PFA	<0.01	0.17	0.05	0.22	0.24	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	02 Mar 2017	TC12_SW_020317	Normal	NSW_0908_PFA	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW019	09 Mar 2017	TC12_SW_090317	Normal	NSW_0908_PFA	<0.01	0.03	0.03	0.06	0.06	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02																		



Table T10 - Surface Water Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water																																		
PFAS NEMP 2020 Recreational Water																																		
PFAS NEMP 2020 Freshwater 99%																																		
SW024	22 Dec 2020	0908_SW024_2012220940	Normal	NSW_0908_PFAOSMP	<0.01	0.11	0.09	0.2	0.20	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table T10 - Surface Water Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water																																		
PFAS NEMP 2020 Recreational Water																																		
PFAS NEMP 2020 Freshwater 99%																																		
SW047	17 Nov 2014	QC101_SW_171114	Interlab_D	NSW_0908_PFA5	0.29	16	2.1	18.1	-	0.13	-	-	<0.01	-	<0.01	0.41	0.09	0.02	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SW047	14 Jan 2016	BD03_SW_1412016	Normal	NSW_0908_PFA5	0.9	31.6	5.16	36.76	-	0.249	-	-	<0.005	-	-	1.74	0.125	0.01	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	
SW047	14 Sep 2016	BD03_140916	Normal	NSW_0908_PFA5	0.15	17	1.3	18.3	-	0.1	0.13	0.17	<0.01	<0.5	0.047	0.27	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SW047	16 Dec 2016	BD03_SW_161216	Normal	NSW_0908_PFA5	0.03	2.27	0.26	2.53	2.63	<0.02	0.03	0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	03 Feb 2017	BD03_SW_030217	Normal	NSW_0908_PFA5	0.05	2.8	0.52	3.32	3.51	0.03	0.04	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	10 Feb 2017	BD03_SW_100217	Normal	NSW_0908_PFA5	<0.05	2.16	0.91	3.07	3.29	<0.05	0.08	0.06	<0.05	<0.2	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
SW047	17 Feb 2017	BD03_SW_17022017	Normal	NSW_0908_PFA5	0.04	1.68	0.64	2.32	2.58	0.04	0.05	0.02	<0.02	<0.1	0.03	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	24 Feb 2017	BD03_SW_240217	Normal	NSW_0908_PFA5	0.05	2.16	0.65	2.81	3.14	0.05	0.05	0.04	<0.02	<0.1	0.04	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	24 Feb 2017	QC409_SW_240217	Field_D	NSW_0908_PFA5	0.06	2.65	0.77	3.42	3.8	0.05	0.06	0.05	<0.02	<0.1	0.04	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	24 Feb 2017	QC508_SW_24022017	Interlab_D	NSW_0908_PFA5	<0.02	1.2	0.28	1.48	-	0.017	-	-	<0.02	<0.05	<0.02	0.053	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	03 Mar 2017	BD03_SW_030317	Normal	NSW_0908_PFA5	0.03	1.65	0.28	1.93	1.99	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	10 Mar 2017	BD03_SW_100317	Normal	NSW_0908_PFA5	0.06	1.78	0.79	2.57	2.89	0.04	0.06	0.03	<0.02	<0.1	<0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	17 Mar 2017	BD03_SW_20170317	Normal	NSW_0908_PFA5	0.06	3.45	1.12	4.57	4.99	0.04	0.06	0.05	<0.02	<0.1	0.03	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	22 Mar 2017	BD03_SW_220317	Normal	NSW_0908_PFA5	0.06	1.73	0.98	2.71	3.18	0.07	0.08	0.04	<0.02	<0.1	0.03	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	31 Mar 2017	BD03_SW_310317	Normal	NSW_0908_PFA5	0.09	4.62	1	5.62	6.22	0.05	0.08	0.06	<0.02	<0.1	0.06	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	07 Apr 2017	BD03_SW_070417	Normal	NSW_0908_PFA5	0.12	3.59	1.74	5.33	6.18	0.12	0.13	0.07	<0.02	<0.1	0.11	0.24	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	05 May 2017	BD03_SW_050517	Normal	NSW_0908_PFA5	0.08	3.28	1.53	4.81	-	0.11	0.17	0.1	<0.02	<0.1	<0.02	0.34	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	05 May 2017	QC417_050517	Field_D	NSW_0908_PFA5	0.07	2.62	1.43	4.05	-	0.12	0.14	0.08	<0.02	<0.1	<0.02	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	05 May 2017	QC_516_050517	Field_D	NSW_0908_PFA5	0.061	1.6	0.93	2.53	-	0.093	-	-	<0.02	0.077	0.2	0.34	0.061	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	02 Jun 2017	BD03_SW_020617	Normal	NSW_0908_PFA5	0.04	1.77	1.01	2.78	3.82	0.09	0.1	0.06	<0.02	<0.1	0.12	0.25	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	21 Jul 2017	BD03_SW_210717	Normal	NSW_0908_PFA5	0.05	2.06	0.92	2.98	3.78	0.06	0.09	0.06	<0.02	<0.1	0.12	0.18	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	12 Apr 2018	BD03_SW_13042018	Normal	NSW_0908_PFA5	0.08	4.95	0.88	5.83	6.35	0.04	0.06	0.07	<0.02	<0.1	0.07	0.16	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW047	07 Dec 2018	0908_BD03_SW_181207	Normal	NSW_0908_PFA5	0.12	6.69	1.42	8.11	8.92	0.05	0.08	0.09	<0.02	<0.1	0.15	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	09 Apr 2019	0908_BD03_190409	Normal	NSW_0908_PFA5	0.12	9.16	1.63	10.79	-	0.09	0.13	0.15	<0.02	<0.1	0.08	0.35	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	09 Apr 2019	0908_QC100_190409	Field_D	NSW_0908_PFA5	0.12	9.91	1.71	11.62	-	0.08	0.14	0.15	<0.02	<0.1	0.08	0.36	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	14 Jun 2019	0908_BD03_SW_190614	Normal	NSW_0908_PFA5	0.09	3.78	0.73	4.51	5.41	0.03	0.05	0.05	<0.02	<0.1	0.1	0.2	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW047	06 Nov 2019	0908_BD03_SW_191106	Normal	NSW_0908_PFA5	0.08	5.12	0.99	6.11	7.01	0.09	0.																							





Table T10 - Surface Water Historical Analytical Results

PFAS	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
	Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)												
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05	0.005	0.01	0.05	
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Recreational Water	10			2																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															

Location Code	Date	Field ID	Sample Type	Project ID	PFCA	PFOS	PFHxS	Sum PFHxS and PFOS	PFBA	PFPeA	PFHpA	PFDA	PFDDA	PFTeDA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	FOSA	MeFOSA	MeFOSAA	MeFOSE	EFOSA	EFOSAA	EFOSE
SW059	14 Jan 2016	DD2_SW_1412016	Normal	NSW_0908_PFAS	0.082	1.56	-	1.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW059	14 Jan 2016	QC200_SW_140116	Interlab_D	NSW_0908_PFAS	0.064	2.6	-	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW059	14 Dec 2016	DD2_SW_161214	Normal	NSW_0908_PFAS	0.1	0.8	1.68	2.48	3.55	0.31	0.28	0.07	<0.02	<0.1	0.06	0.25	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	02 Feb 2017	DD2_SW_020217	Normal	NSW_0908_PFAS	0.03	1.61	0.66	2.27	2.59	0.06	0.08	0.03	<0.02	<0.1	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	09 Feb 2017	DD2_SW_090217	Normal	NSW_0908_PFAS	<0.05	0.44	0.12	0.56	0.56	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.12	<0.05
SW059	16 Feb 2017	DD2_SW_16022017	Normal	NSW_0908_PFAS	<0.05	0.08	0.18	0.26	4.66	<0.05	<0.05	<0.05	<0.05	4.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.12
SW059	02 Mar 2017	DD2_SW_020317	Normal	NSW_0908_PFAS	0.02	0.62	0.65	1.27	1.52	0.06	0.07	<0.02	<0.2	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1030	Normal	NSW_0908_PFAS	<0.01	0.05	0.06	0.11	0.11	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1045	Normal	NSW_0908_PFAS	0.03	1.13	0.73	1.86	2.1	0.04	0.06	0.03	<0.02	<0.1	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1100	Normal	NSW_0908_PFAS	0.03	1.01	0.62	1.63	1.84	0.04	0.05	0.03	<0.02	<0.1	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1115	Normal	NSW_0908_PFAS	0.03	0.86	0.61	1.47	1.66	0.04	0.04	0.02	<0.02	<0.1	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1130	Normal	NSW_0908_PFAS	0.02	0.82	0.54	1.36	1.53	0.04	0.04	0.02	<0.02	<0.1	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1145	Normal	NSW_0908_PFAS	0.02	0.95	0.51	1.46	1.59	0.03	0.03	<0.02	<0.2	<0.1	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1200	Normal	NSW_0908_PFAS	0.02	0.67	0.34	1.01	1.1	0.02	0.02	<0.02	<0.2	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1215	Normal	NSW_0908_PFAS	0.01	0.71	0.32	1.03	1.11	0.02	0.02	<0.02	<0.2	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1230	Normal	NSW_0908_PFAS	0.02	0.8	0.42	1.22	1.34	0.03	0.03	<0.02	<0.2	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1245	Normal	NSW_0908_PFAS	0.02	0.85	0.46	1.31	1.45	0.03	0.03	0.02	<0.02	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1300	Normal	NSW_0908_PFAS	0.01	0.64	0.33	0.97	1.06	0.02	0.03	<0.02	<0.2	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1315	Normal	NSW_0908_PFAS	0.01	0.6	0.31	0.91	0.99	0.02	0.02	<0.02	<0.2	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1330	Normal	NSW_0908_PFAS	0.01	0.64	0.33	0.97	1.06	0.02	0.03	<0.02	<0.2	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1345	Normal	NSW_0908_PFAS	0.02	0.78	0.43	1.21	1.35	0.03	0.03	0.02	<0.02	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1400	Normal	NSW_0908_PFAS	0.02	0.75	0.42	1.17	1.29	0.03	0.03	<0.02	<0.2	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1415	Normal	NSW_0908_PFAS	0.02	0.68	0.36	1.04	1.15	0.03	0.02	<0.02	<0.2	<0.1	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	08 Mar 2017	DD2_AS_080317_1430	Normal	NSW_0908_PFAS	0.02	0.62	0.33	0.95	1.04	0.02	0.02	<0.02	<0.2	<0.1	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	09 Mar 2017	DD2_SW_090317	Normal	NSW_0908_PFAS	0.01	0.34	0.58	0.92	1.28	0.13	0.1	<0.02	<0.2	<0.1	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	16 Mar 2017	DD2_SW_20170316	Normal	NSW_0908_PFAS	0.01	0.26	1.22	1.48	2.15	0.22	0.18	<0.02	<0.2	<0.1	0.04	0.22	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_200317_0245	Normal	NSW_0908_PFAS	0.04	0.7	1.51	2.21	3.08	0.32	0.27	0.05	<0.02	<0.1	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_0300	Normal	NSW_0908_PFAS	0.03	0.67	1.46	2.13	2.93	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_0945	Normal	NSW_0908_PFAS	0.02	0.65	1.31	1.96	2.75	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_1000	Normal	NSW_0908_PFAS	0.02	0.59	1.35	1.94	2.73	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_1015	Normal	NSW_0908_PFAS	0.03	0.62	1.32	1.94	2.74	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_1030	Normal	NSW_0908_PFAS	0.03	0.52	1.31	1.83	2.63	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_1045	Normal	NSW_0908_PFAS	0.02	0.61	1.36	1.97	2.76	0.31	0.26	0.04	<0.02	<0.1	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	20 Mar 2017	DD2_AS_220317_1100	Normal	NSW_0908_PFAS	0.02	0.54	1.38	1.92	2.7	0.32	0.25	0.04	<0.02	<											

Table T10 - Surface Water Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																			
PFAS NEMP 2020 Drinking Water																																			
PFAS NEMP 2020 Recreational Water																																			
PFAS NEMP 2020 Freshwater 99%																																			
SW059	04 Jun 2020	0908_SW059_200604	Normal	NSW_0908_PFAOSMP	0.12	0.85	4.87	5.72	9.20	0.72	0.84	0.15	<0.02	0.1	0.22	1.21	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW059	13 Nov 2020	0908_SW059_201113	Normal	NSW_0908_PFAOSMP	0.06	1.31	1.19	2.5	3.21	0.09	0.10	0.05	<0.02	<0.1	0.08	0.30	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	18 Dec 2020	0908_SW059_201218	Normal	NSW_0908_PFAOSMP	0.08	0.87	1.96	2.83	3.88	0.22	0.21	0.08	<0.02	<0.1	0.06	0.36	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220200	Normal	NSW_0908_PFAOSMP	0.04	0.72	1.3	2.02	2.63	0.12	0.12	0.05	<0.02	<0.1	0.04	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220300	Normal	NSW_0908_PFAOSMP	0.04	0.55	1.2	1.75	2.31	0.11	0.11	0.04	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220400	Normal	NSW_0908_PFAOSMP	0.05	0.72	1.36	2.08	2.73	0.11	0.13	0.05	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220500	Normal	NSW_0908_PFAOSMP	0.06	0.8	1.5	2.3	3.02	0.13	0.15	0.05	<0.02	<0.1	0.05	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220600	Normal	NSW_0908_PFAOSMP	0.05	0.62	1.42	2.04	2.72	0.12	0.14	0.05	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220700	Normal	NSW_0908_PFAOSMP	0.06	0.91	1.76	2.67	3.51	0.15	0.17	0.06	<0.02	<0.1	0.06	0.30	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220800	Normal	NSW_0908_PFAOSMP	0.06	0.84	1.78	2.62	3.48	0.15	0.18	0.06	<0.02	<0.1	0.06	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012220900	Normal	NSW_0908_PFAOSMP	0.07	0.92	1.91	2.83	3.78	0.17	0.19	0.07	<0.02	<0.1	0.07	0.34	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221000	Normal	NSW_0908_PFAOSMP	0.07	0.81	2.04	2.85	3.83	0.18	0.20	0.07	<0.02	<0.1	0.07	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221100	Normal	NSW_0908_PFAOSMP	0.07	0.77	2.04	2.81	3.81	0.18	0.20	0.07	<0.02	<0.1	0.07	0.36	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221200	Normal	NSW_0908_PFAOSMP	0.08	0.95	2.17	3.12	4.19	0.20	0.21	0.08	<0.02	<0.1	0.08	0.38	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221300	Normal	NSW_0908_PFAOSMP	0.08	0.95	2.23	3.18	4.29	0.20	0.22	0.08	<0.02	<0.1	0.08	0.40	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221400	Normal	NSW_0908_PFAOSMP	0.09	1.07	2.56	3.63	4.87	0.22	0.24	0.09	<0.02	<0.1	0.09	0.45	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221500	Normal	NSW_0908_PFAOSMP	0.08	1.1	2.19	3.19	4.31	0.20	0.21	0.08	<0.02	<0.1	0.08	0.42	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221600	Normal	NSW_0908_PFAOSMP	0.05	0.75	1.5	2.25	3.01	0.14	0.16	0.06	<0.02	<0.1	0.06	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221700	Normal	NSW_0908_PFAOSMP	0.05	0.71	1.37	2.08	2.75	0.12	0.14	0.05	<0.02	<0.1	0.04	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221800	Normal	NSW_0908_PFAOSMP	0.04	0.57	1.17	1.74	2.31	0.10	0.12	0.05	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012221900	Normal	NSW_0908_PFAOSMP	0.03	0.63	1.19	1.82	2.37	0.10	0.12	0.04	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012222000	Normal	NSW_0908_PFAOSMP	0.04	0.55	1.03	1.58	2.07	0.09	0.10	0.04	<0.02	<0.1	0.03	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012222100	Normal	NSW_0908_PFAOSMP	0.03	0.55	0.99	1.54	2.02	0.09	0.10	0.04	<0.02	<0.1	0.03	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012222200	Normal	NSW_0908_PFAOSMP	0.04	0.61	1.16	1.77	2.31	0.10	0.11	0.04	<0.02	<0.1	0.04	0.19	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW059	22 Dec 2020	0908_SW059_2012222300	Normal	NSW_0908_PFAOSMP	0.02	0.53	0.97	1.5	1.94	0.08	0.10	0.03	<0.02																						



















Table T11 - Sediment Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDDa)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
SD007	08 Nov 2022	0908_SD007_221108	Normal	NSW_0908_PFAASOMP	<0.0002	0.0088	0.0009	0.0097	0.0097	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD007	08 May 2023	0908_SD007_230508	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0383	0.0007	0.0390	0.0395	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD009	28 Jan 2016	MD8_SD_28012016	Normal	NSW_0908_PFAASOMP	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
SD009	14 Dec 2016	MD8_SED_20161214	Normal	NSW_0908_PFAASOMP	0.0004	0.0868	0.0116	0.0984	0.103	0.0006	0.0007	0.0021	<0.0002	<0.001	<0.0002	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD009	01 May 2018	MD8_SED_01052018	Normal	NSW_0908_PFAASOMP	0.0003	0.0702	0.0105	0.0807	0.0867	<0.0002	0.0003	0.0009	0.0024	<0.001	<0.0002	0.0003	<0.0002	0.0003	0.0003	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD009	07 Dec 2018	0908_MD8_SD_181207	Normal	NSW_0908_PFAASOMP	<0.0002	<0.0002	0.0006	0.0006	0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD009	07 Dec 2018	0908_MD8_SD_181207	Normal	NSW_0908_PFAASOMP	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD009	13 Jun 2019	0908_MD8_SD_190613	Normal	NSW_0908_PFAASOMP	<0.0002	0.0016	0.0002	0.0018	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	06 Nov 2019	0908_MD8_SD_191106	Normal	NSW_0908_PFAASOMP	<0.0002	0.0057	0.0005	0.0062	0.0062	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	24 Jun 2020	0908_SD009_200624	Normal	NSW_0908_PFAASOMP	<0.0002	0.0051	0.0003	0.0054	0.0054	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	26 Nov 2020	0908_SD009_201126	Normal	NSW_0908_PFAASOMP	0.0002	0.0556	0.0030	0.0586	0.0598	<0.0002	<0.0002	0.0005	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	11 May 2021	0908_SD009_210511	Normal	NSW_0908_PFAASOMP	<0.0002	0.0247	0.0012	0.0259	0.0259	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	17 Nov 2021	0908_SD009_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0171	0.0009	0.0180	0.0188	<0.0002	<0.0002	<0.0002	0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	17 May 2022	0908_QC105_220517	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0194	0.0016	0.0210	0.0226	<0.0002	<0.0002	<0.0002	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	17 May 2022	0908_QC205_220517	Interlab_D	NSW_0908_PFAASOMP	0.0001	0.035	0.0013	0.036	0.039	<0.0001	<0.0001	0.0003	0.001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD009	17 May 2022	0908_SD009_220517	Normal	NSW_0908_PFAASOMP	<0.0002	0.0077	0.0004	0.0081	0.0085	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	08 Nov 2022	0908_QC107_221108	Field_D	NSW_0908_PFAASOMP	<0.0002	0.0062	0.0008	0.0070	0.0070	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	08 Nov 2022	0908_QC207_221108	Interlab_D	NSW_0908_PFAASOMP	<0.0001	0.0059	0.0005	0.0064	0.0067	<0.0001	<0.0001	0.0003	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD009	08 Nov 2022	0908_SD009_221108	Normal	NSW_0908_PFAASOMP	<0.0002	0.0133	0.0013	0.0146	0.0159	0.0005	<0.0002	0.0003	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	08 May 2023	0908_QC104_230508	Field_D	NSW_0908_PFAASOMP_23	<0.0002	0.0176	0.0011	0.0187	0.0195	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD009	08 May 2023	0908_QC204_230508	Interlab_D	NSW_0908_PFAASOMP_23	<0.0001	0.028	0.0015	0.029	0.03	<0.0001	<0.0001	0.0003	0.0003	<0.0002	<0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD009	08 May 2023	0908_QC205_230508	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0131	0.0008	0.0139	0.0146	<0.0002	<0.0002	0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD011	12 Feb 2016	MD10_SD_12022016	Normal	NSW_0908_PFAASOMP	<0.0005	0.0006	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD011	12 Feb 2016	QC103_SD_12022016	Field_D	NSW_0908_PFAASOMP	<0.0005	0.0006	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SD011	13 Feb 2017	MD10_SED_130217	Normal	NSW_0908_PFAASOMP	<0.0002	0.0028	0.0005	0.0033	0.0033	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD011	07 Dec 2018	0908_MD10_SD_181207	Normal	NSW_0908_PFAASOMP	0.0002	0.0154																												







Table T11 - Sediment Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFCA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD254	15 Nov 2022	0908_SD254_221115	Normal	NSW_0908_PFAASOMP	0.0005	0.0378	0.0023	0.0401	0.0423	<0.0002	<0.0002	0.0003	0.0012	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD254	16 May 2023	0908_SD254_230516	Normal	NSW_0908_PFAASOMP_23	0.0007	0.0321	0.0016	0.0337	0.0346	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD255	07 Dec 2018	0908_FC1B_SD_181207	Normal	NSW_0908_PFAAS	<0.0002	0.0137	0.0003	0.014	0.0145	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		
SD255	14 Jun 2019	0908_FC1B_SD_190614	Normal	NSW_0908_PFAAS	<0.0002	0.0024	0.0004	0.0028	0.0028	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	08 Nov 2019	0908_FC1B_SD_191108	Normal	NSW_0908_PFAASOMP	0.0004	0.0075	0.0020	0.0095	0.0103	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	12 Jun 2020	0908_SD255_200612	Normal	NSW_0908_PFAASOMP	<0.0002	0.0116	0.0011	0.0127	0.0127	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	13 Nov 2020	0908_SD255_201113	Normal	NSW_0908_PFAASOMP	0.0008	0.0094	0.0026	0.0120	0.0134	<0.0002	<0.0002	0.0003	0.0003	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	10 May 2021	0908_SD255_210510	Normal	NSW_0908_PFAASOMP	0.0023	0.0433	0.0044	0.0477	0.0522	<0.0002	<0.0002	0.0007	<0.0002	<0.001	<0.0002	0.0010	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	26 Nov 2021	0908_SD255_211126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0154	0.0007	0.0161	0.0164	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	27 May 2022	0908_SD255_220527	Normal	NSW_0908_PFAASOMP	<0.0002	0.0309	0.0008	0.0317	0.0320	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	15 Nov 2022	0908_SD255_221115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0288	0.0007	0.0295	0.0299	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD255	16 May 2023	0908_SD255_230516	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0180	0.0004	0.0184	0.0190	<0.0002	<0.0002	<0.0002	0.0004	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	21 Feb 2017	FCD4_SED_17022017	Normal	NSW_0908_PFAAS	<0.0002	0.0168	0.0005	0.0173	0.0175	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	12 Apr 2018	FCD4_SED_13042018	Normal	NSW_0908_PFAAS	<0.0002	0.0045	0.0007	0.0052	0.0052	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	07 Dec 2018	0908_FCD4_SD_181207	Normal	NSW_0908_PFAAS	<0.0002	0.0014	0.0005	0.0019	0.0019	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	14 Jun 2019	0908_FCD4_SD_190614	Normal	NSW_0908_PFAAS	<0.0002	0.0012	<0.0002	0.0012	0.0012	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	14 Jun 2019	0908_FCD4_SD_190614	Normal	NSW_0908_PFAAS	-	-	-	0.0014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SD259	08 Nov 2019	0908_FCD4_SD_191108	Normal	NSW_0908_PFAASOMP	<0.0002	0.0010	0.0013	0.0023	0.0025	<0.0002	0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	25 May 2020	0908_SD259_200525	Normal	NSW_0908_PFAASOMP	<0.0002	0.0078	0.0014	0.0092	0.0097	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	13 Nov 2020	0908_SD259_201113	Normal	NSW_0908_PFAASOMP	0.0004	0.0111	0.0029	0.0140	0.0149	<0.0002	<0.0002	0.0003	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	10 May 2021	0908_SD259_210510	Normal	NSW_0908_PFAASOMP	0.0004	0.0292	0.0045	0.0337	0.0361	<0.0002	<0.0002	0.0003	0.0002	<0.001	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	26 Nov 2021	0908_SD259_211126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0006	0.0004	0.0010	0.0010	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	27 May 2022	0908_SD259_220527	Normal	NSW_0908_PFAASOMP	<0.0002	0.0016	<0.0002	0.0016	0.0016	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD259	15 Nov 2022	0908_SD259_221115	Normal	NSW_0908_PFAASOMP	<0.0002	0.0042	0.0005	0.0047	0.0047	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002																		



Table T12 - Soil Historical Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides							
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSeA)	N-methyl perfluorooctane sulfonamide (MeFOSe)	N-Ethyl perfluorooctane sulfonamide (EtFOSeA)	N-Ethyl perfluorooctane sulfonamide (EtFOSe)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR																																	
PFAS NEMP 2020 Public open space (HIL C)																																	
PFAS NEMP 2020 Ecological indirect exposure																																	
PFAS NEMP 2020 Ecological direct exposure																																	
SS101	15 Nov 2019	0908_SS101_191115	Normal	NSW_0908_PFA5OMP	0.0008	0.0245	0.0079	0.0324	0.0381	0.0007	0.0004	0.0003	<0.0002	<0.001	0.0014	0.0015	0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	19 Jun 2020	0908_SS001_200619	Normal	NSW_0908_PFA5OMP	<0.0002	0.0028	0.0004	0.0032	0.0032	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	26 Nov 2020	0908_SS101_201126	Normal	NSW_0908_PFA5OMP	<0.0002	0.0139	0.0011	0.0150	0.0164	0.0006	0.0008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	12 May 2021	0908_SS101_210512	Normal	NSW_0908_PFA5OMP	<0.0002	0.0058	0.0006	0.0064	0.0064	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	17 Nov 2021	0908_SS101_211117	Normal	NSW_0908_PFA5OMP	<0.0002	0.0040	0.0004	0.0044	0.0044	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	16 May 2022	0908_SS101_220516	Normal	NSW_0908_PFA5OMP	<0.0002	0.0023	0.0002	0.0025	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	07 Nov 2022	0908_QC102_221107	Field_D	NSW_0908_PFA5OMP	<0.0002	0.0026	0.0005	0.0031	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	07 Nov 2022	0908_QC202_221107	Interlab_D	NSW_0908_PFA5OMP	<0.0001	0.0022	0.0002	0.0024	0.0024	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	07 Nov 2022	0908_SS101_221107	Normal	NSW_0908_PFA5OMP	<0.0002	0.0030	0.0003	0.0033	0.0033	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	09 May 2023	0908_QC205_230509	Interlab_D	NSW_0908_PFA5OMP_23	<0.0001	0.0009	<0.0001	0.0009	0.0009	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS101	09 May 2023	0908_SS101_230509	Normal	NSW_0908_PFA5OMP_23	<0.0002	0.0007	<0.0002	0.0007	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	15 Nov 2019	0908_SS102_191115	Normal	NSW_0908_PFA5OMP	0.0003	0.0119	0.0072	0.0191	0.0236	0.0003	0.0004	0.0004	<0.0002	<0.001	0.0005	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	19 Jun 2020	0908_SS002_200619	Normal	NSW_0908_PFA5OMP	<0.0002	0.0031	0.0003	0.0034	0.0034	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	26 Nov 2020	0908_QC111_201126	Field_D	NSW_0908_PFA5OMP	<0.0002	0.0208	0.0021	0.0229	0.0229	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	26 Nov 2020	0908_QC211_201126	Interlab_D	NSW_0908_PFA5OMP	<0.001	0.015	0.0018	0.0168	-	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
SS102	26 Nov 2020	0908_SS102_201126	Normal	NSW_0908_PFA5OMP	<0.0002	0.0190	0.0021	0.0211	0.0211	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	12 May 2021	0908_SS102_210512	Normal	NSW_0908_PFA5OMP	<0.0002	0.0091	0.0011	0.0101	0.0101	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	17 Nov 2021	0908_SS102_211117	Normal	NSW_0908_PFA5OMP	<0.0002	0.0031	<0.0002	0.0031	0.0031	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	16 May 2022	0908_QC101_220516	Field_D	NSW_0908_PFA5OMP	0.0002	0.0132	0.0007	0.0139	0.0149	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	16 May 2022	0908_SS102_220516	Normal	NSW_0908_PFA5OMP	0.0002	0.0149	0.0008	0.0157	0.0165	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	07 Nov 2022	0908_SS102_221107	Normal	NSW_0908_PFA5OMP	0.0003	0.0408	0.0060	0.0468	0.0486	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	09 May 2023	0908_QC103_230509	Field_D	NSW_0908_PFA5OMP_23	<0.0002	0.0049	0.0023	0.0072	0.0079	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS102	09 May 2023	0908_SS102_230509	Normal	NSW_0908_PFA5OMP_23	<0.0002	0.0043	0.0034	0.0077	0.0087	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS103	15 Nov 2019	0908_SS103_191115	Normal	NSW_0908_PFA5OMP	<0.0002	0.0022	0.0002	0.0024	0.0024	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SS103	19 Jun 2020	0908_SS003_200619	Normal	NSW_0908_PFA5OMP	<0.0002	0.0121	0.0019	0.0140	0.0142	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0														





# Appendix C

## Calibration Certificates

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-7876
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	03/05/2023
<b>Calibration Due</b>	03/11/2023

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8895
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	03/05/2023
<b>Calibration Due</b>	03/11/2023

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8142
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	03/05/2023
<b>Calibration Due</b>	03/11/2023

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8272
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	24/05/2023
<b>Calibration Due</b>	24/11/2023

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Pro Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	21A103000
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	18.1	18.4	18.1	°C
pH	pH 4.00	386466	4.01	4.04	4.01	pH
pH	pH 7.00	387329	7.00	7.03	7.00	pH
Conductivity	2760 µS/cm at 25°C	388521	2760	2983	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	241.0	244.6	241.0	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	-0.8	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	103.1	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	04/05/2023
<b>Calibration Due</b>	04/11/2023

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Pro Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	21C100008
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	18.1	18.3	18.1	°C
pH	pH 4.00	386466	4.01	3.98	4.01	pH
pH	pH 7.00	387329	7.00	6.97	7.00	pH
Conductivity	2760 µS/cm at 25°C	388521	2760	2604	2760	µS/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	241.0	247.1	241.0	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	0.0	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	97.2	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	04/05/2023
<b>Calibration Due</b>	04/11/2023



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	60612562
Project Location:	WLM	Client:	DOD
PM Name:	GT	Fieldwork Staff Name:	MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI Professional Plus
Serial Number:	21A103000

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	8/5/23 @ 7:20				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.04	2338	0	
Bump Test Reading:	4.05	7.06	2341	0.04	
Bump Test Temperature:	17.1	17.0	17.0	18.0	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Bump test passed

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

\_\_\_\_\_  
Fieldwork Staff Signature

8/5/23  
\_\_\_\_\_  
Date

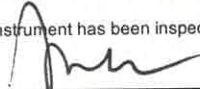
Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	6062562		Project Number:	6 PFA3 5MP	
Project Location:	WILLIAMTOWN		Client:	DEFENCE	
PM Name:	G.T		Fieldwork Staff Name:	G.T	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM SCIENTIFIC				
Make and Model:	YSI Professional series				
Serial Number:	21C100008				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:				0	
Calibration Reading:				0	
Calibration Temperature:				19.4	
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	8/5/23 @ 7:30				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7	4	2391	0	
Bump Test Reading:	7.09	4.10	2530	0.09	
Bump Test Temperature:	18.0	18.1	18.0	19.4	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
BUMP TEST PASSED					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 _____ Fieldwork Staff Signature			8/5/23 _____ Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OHP	Project Number:	60612562
Project Location:	WLM	Client:	Dod
PM Name:	GT	Fieldwork Staff Name:	MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	XS WAM
Make and Model:	YSI Professional Plus
Serial Number:	21A103000

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

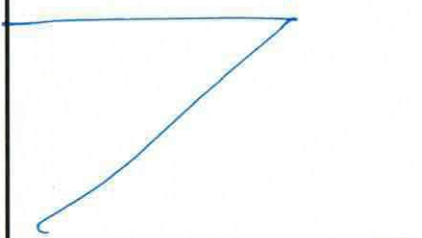
**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	9/5/23 @ 7:25				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.04	2338	0	
Bump Test Reading:	4.06	7.06	2366	0.00	
Bump Test Temperature:	16.2	16.1	17.1	16.4	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Bump test passed



**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

\_\_\_\_\_ 9/5/23 \_\_\_\_\_  
 Fieldwork Staff Signature Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	60612562	Project Number:	PFAS oMP
Project Location:	WILLIAMTOWN	Client:	DEFENCE
PM Name:	G.T	Fieldwork Staff Name:	

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC
Make and Model:	YSI Professional series
Serial Number:	21C100008

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	9/5/23 @ 7:15 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2338	0	
Bump Test Reading:	4.08	7.902	2483	0.01	
Bump Test Temperature:	17	17.1	17	17	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

BUMP TEST PASSED

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

9/5/23  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	Project Number:	80612562
Project Location:	WILLIAMTOWN	Client:	DEFENCE
PM Name:	G.T	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC
Make and Model:	YSI PROFESSIONAL JERVIS
Serial Number:	21A103000

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	/				
Calibration Reading:	/				
Calibration Temperature:	/				

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	7:15AM 10/5/23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2500	0	/
Bump Test Reading:	4.01	6.97	2689	0.01	/
Bump Test Temperature:	19.5	19.3	19.5	26.1	/

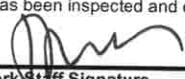
**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

BUMP TEST PASSED

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.


10/5/23  
 \_\_\_\_\_  
 Fieldwork Staff Signature Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PTAS OMP	Project Number:	60612562
Project Location:	Williamstown	Client:	Defence
PM Name:	G.T	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of networks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC
Make and Model:	YSI PROFESSIONAL SERIES
Serial Number:	21C100008

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	10/5/23 0700 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4 #	/	2444	/	/
Calibration Reading:	4	/	2446	/	/
Calibration Temperature:	18.3	/	19.0	/	/

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	10/5/23 0700 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2444	0	/
Bump Test Reading:	4.13	7.01	2736	0	/
Bump Test Temperature:	18.7	18.0	19.0	19.0	/

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Bump test completed

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[Signature]  
Fieldwork Staff Signature

10/5/23  
Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	6061 2562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI Prof. Plus
Serial Number:	Z1A103000

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	H/2 11/5/23 @ 06:45				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.02	4.00	2549	0	
Bump Test Reading:	7.03	4.06	2389	0.62	
Bump Test Temperature:	21.5	21.2	20.6	21.5	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Conductivity within 10%, considered within acceptable range.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

\_\_\_\_\_ Fieldwork Staff Signature

\_\_\_\_\_ Date

Distribution: Project Central File



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFASOMP	Project Number:	60612562
Project Location:	WILLIAM TOWN	Client:	Defence
PM Name:	G-T	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC
Make and Model:	YSI PROFESSIONAL SERIES
Serial Number:	21C100008

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	6:30AM 11/5/23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.02	2496	0	
Bump Test Reading:	4.04	7.05	2381	0.01	
Bump Test Temperature:	21.1	21.2	20.3 21.1 MH	20.9	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[Signature]  
Fieldwork Staff Signature

11/5/23  
Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

60612562

Q4AN(EV)-410-FM1

Project Name:	OIMP	Project Number:	60612562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MA

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM
Make and Model:	YSI Prof. Plus
Serial Number:	21A105000

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	12/5 at 7:10am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.02	4.00	2549	0	
Bump Test Reading:	6.97	4.04	2475	0.3	
Bump Test Temperature:	21.0	21.2	21.0	21.0	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

*(Large empty area for handwritten comments)*

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

Fieldwork Staff Signature

12/5/23

Date

Distribution: Project Central File



**FQM - Water Quality Meter Calibration Record**

Project Name:	<u>OMP</u>	Project Number:	<u>00612562</u>
Project Location:	<u>WLM</u>	Client:	<u>DoD</u>
PM Name:	<u>GT</u>	Fieldwork Staff Name:	<u>MH</u>

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	<u>WAM</u>
Make and Model:	<u>YSI Prof. Plus</u>
Serial Number:	<u>21C10003</u>

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	<u>12/5 at 7:10</u>				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	<u>7.02</u>	<u>4.00</u>	<u>2549</u>	<u>0</u>	
Bump Test Reading:	<u>6.99</u>	<u>3.98</u>	<u>2430</u>	<u>0.02</u>	
Bump Test Temperature:	<u>20.9</u>	<u>21.1</u>	<u>21.0</u>	<u>21.7</u>	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[Signature]  
Fieldwork Staff Signature

12/5/23  
Date

Distribution: Project Central File

Project Name:	Omp WLM	Project Number:	60612562
Project Location:	WILLIAM TOWN	Client:	DEFENCE
PM Name:	<del>XXXXXXXXXX</del>	Fieldwork Staff Name:	<del>XXXXXXXXXX</del>

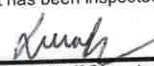
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

<b>INSTRUMENT DETAILS</b>	
Supplier:	WAM
Make and Model:	Pro plus Y17 QUA7RG
Serial Number:	21B100351

<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:	15/5/23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH	µS/cm	ppm	ppm
Units					
Calibration Standard Concentration:	4.00	7.00	2760	0.0	
Calibration Reading:	4.01	6.99	2755	0.00	
Calibration Temperature:	16.4	16.0	16.4	16.2	

<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	<del>15/5/23</del>				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH	µS/cm	ppm	ppm
Units					
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

**COMMENTS**  
 Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

<b>Approval and Distribution</b>	
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.	
 _____ Fieldwork Staff Signature	15/5/23 _____ Date

Distribution: Project Central File



**FQM - Water Quality Meter Calibration Record**

Project Name:	OMP WLM	Project Number:	60612562
Project Location:	WILLIAMTOWN	Client:	DEFENCE
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WHM
Make and Model:	PRO PLUS, YJ QUITRO
Serial Number:	215100351

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	16/5/23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH	µS/cm	ppm	ppm
Units					
Calibration Standard Concentration:	4.00	7.00	2760	0.00	
Calibration Reading:	4.02	6.98	2701	0.00	
Calibration Temperature:	20.2	20.1	19.7	19.5	

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH	µS/cm	ppm	ppm
Units					
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					


**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

[Empty space for comments]

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 Fieldwork Staff Signature
 

 16/5/23  
 Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown	Client:	Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	W/M
Make and Model:	RR0 PLUS, YSI QUATRO
Serial Number:	21B100351

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	17/5/23, 7:53 AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.00	7.00	2760	0	
Bump Test Reading:	4.02	7.03	2790	0.05	
Bump Test Temperature: °C	18.6	18.5	18.6	18.7	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

N/A

#### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

17/5/23  
 \_\_\_\_\_  
 Date

Distribution: Project Central File



# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown	Client:	Defence
PM Name:		Fieldwork Staff Name:	

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WQM
Make and Model:	YSI QUATRO
Serial Number:	213100351

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:	18/5/23 Thursday				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4				
Calibration Reading:	4.00				
Calibration Temperature:	18				

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	18/5/23 Thursday				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2760	0	
Bump Test Reading:	4.56	6.98	2764	0.03	
Bump Test Temperature:	18	18.2	17.8	17.9	

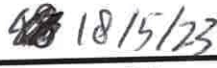
### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

#### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

# FIELDWORK QUALITY MANUAL

## FQM-5.10-F1 – WATER QUALITY METER CALIBRATION RECORD

Project Name:	WLM OMP	Project Number:	60612562
Project Location:	Williamtown	Client:	Defence
PM Name:	[REDACTED]	Fieldwork Staff Name:	[REDACTED]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

### INSTRUMENT DETAILS

Supplier:	WAM
Make and Model:	YSI 60A7RO
Serial Number:	21 B 100351

### CALIBRATION

#### CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

### ONGOING CHECKS

#### BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	19/5/23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	2760	0	
Bump Test Reading:	4.01	7.03	2746	0.01	
Bump Test Temperature:	18.8	19	18.9	18.9	

### COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

#### Approval and Distribution

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

19/5/23  
 \_\_\_\_\_  
 Date

Distribution: Project Central File



ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	[Redacted] <i>Pesi</i>	Project Number:	[Redacted] <i>60612562</i>
Project Location:	[Redacted] <i>Fullerton Ave.</i>	Client:	[Redacted] <i>Defence</i>
PM Name:	[Redacted]	Fieldwork Staff Name:	[Redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM <i>AECOM OWNED</i>
Make and Model:	YSI Professional
Serial Number:	<i>WQM02 - AECOM OWNED</i>

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH		ppm	ppm
Calibration Standard Concentration:	4.00'	7.00'	2760	0.0	/
Calibration Reading:	<i>4.00</i>	<i>7.00</i>	<i>2756</i>	<i>0.0</i>	
Calibration Temperature:	<i>14.9</i>	<i>15.1</i>	<i>15.2</i>	<i>14.5</i>	

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	Acidity		Conductivity	Dissolved Oxygen	
	pH	pH		ppm	ppm
Calibration Standard Concentration:					
Bump Test Reading:					
Bump Test Temperature:					

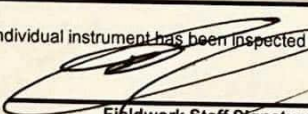
**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

*NA.*

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 Fieldwork Staff Signature

*9/8/23*  
 Date

Distribution: Project Central File

# Appendix D

## Analytical Data Validation



## DATA VALIDATION REPORT

Project number:	60612562	Validation by:	[REDACTED] and [REDACTED]	Date:	19/09/2023
Client:	Department of Defence	Data verified by:	[REDACTED]	Date:	21/09/2023
Site:	RAAF Base Williamstown	Project Manager:	[REDACTED]		
Matrix type:	Groundwater, Surface Water, Sediment and Surface Soil				
Primary samples:	139 Groundwater samples (plus 2 from resampling), 22 Surface Water samples, 25 Sediment samples and 12 Surface Soil samples				
Laboratory:	Primary: ALS, Secondary: Envirolab				
Lab reference:	ALS: ES2315889, ES2315943, ES2316895, ES2317275, ES2317277, ES2317280, ES2317281, ES2317282, ES2317284, ES2317285, ES2317355, ES2317358, ES2317361, ES2317369, ES2317408, ES2317410, ES2317411, ES2317412, ES2317413, ES2317414, ES2317415, ES2317703, ES2326636, ES2326637. Envirolab: 323025, 323627.				
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.				
<b>Field Quality Assurance and Quality Control</b>					
Field DQOs and DOIs	The data quality objectives (DQOs) and data quality indicators (DOIs) adopted for these works are presented in the SAQP (AECOM, 2023).				
Sampling personnel	Sampling was conducted by [REDACTED] and [REDACTED] between 8/05/2023 and 26/05/2023, and subsequent resampling completed on 9/08/2023. Field personnel were suitably qualified and experienced AECOM Environmental Scientists and Engineers.				
Sampling Methodology	<p>All water and soil / sediment samples were collected in accordance with the methodology outlined in the SAQP (AECOM, 2023).</p> <p>After each sample was collected, reusable equipment was decontaminated using Liquinox and potable water, and the consumables (nitrile gloves and HydraSleeve™ material) were disposed of in waste bins.</p>				
Chain of Custody (COC)	All samples collected were reported on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.				
Rinsate Blank	<p>Rinsate blank samples were collected at a frequency of 1 per day of sampling where equipment was re-used and decontaminated between sample points. Rinsate blank samples were either collected from the final rinse of the interface probe or the trowel, using laboratory-supplied de-ionised water.</p> <p>In total, 11 rinsate samples were collected over 12 days of sampling. However, on 26 May 2023 no rinsate blank samples were collected given only one sample was collected on that day and no equipment was re-used.</p>				
Frequency of field QC	<p>Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected above the required frequency of 1 in ten primary samples (10%), for water and soil samples collectively. Overall, 21 field duplicates and 21 field triplicates for 200 primary samples were collected, these comprised:</p> <ul style="list-style-type: none"> <li>• 16 water field duplicates and 15 water field triplicates were collected for 161 primary water samples.</li> <li>• 5 sediment/soil field duplicates and 6 sediment/soil field triplicates were collected for 37 primary sediment/soil samples in total.</li> </ul>				

## DATA VALIDATION REPORT

Handling and preservation	All samples were received by the primary laboratory and secondary laboratory in appropriate containers, with ice present, at temperatures between 2.0 and 5.8°C, within the recommended temperature range (<6°C).
Calibration of equipment	<p>Measurements of water geochemical parameters were undertaken using YSI Professional Plus water quality meters, which were calibrated by the supplier prior to use, in accordance with the manufacturer's instructions and bump tested daily by the field personnel. Measurements of depth to groundwater were undertaken using interface probes, which were serviced by the supplier prior to use.</p> <p>All equipment calibration and service certificates are presented in Appendix C.</p>
<b>Laboratory QA/QC</b>	
Laboratory DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).
Tests requested/reported	<p>All samples were analysed for per- and polyfluoroalkyl substances (PFAS) extended suite, at the standard level of detection.</p> <p>All sample requests for analysis are reported on the Chain of Custody (COC) and subsequent email amendments.</p>
Holding time compliance	All samples were extracted and analysed by the laboratory within the recommended holding times.
Laboratory accreditation	The primary laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney) a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825). The secondary samples were analysed at Envirolab Services, also a NATA accredited laboratory (accreditation number 2901).
Frequency of laboratory QC	<p>The primary laboratory ALS reported a sufficient frequency of quality control samples to assess whether the results have been reported with acceptable accuracy and precision, with the exception of:</p> <p>Laboratory Duplicates</p> <ul style="list-style-type: none"> <li>• ES2326636: PFAS by LCMSMS (actual rate: 0.00%, expected rate: 10.00%)</li> <li>• ES2326637: PFAS by LCMSMS (actual rate: 0.00%, expected rate: 10.00%)</li> </ul> <p>Matrix Spikes</p> <ul style="list-style-type: none"> <li>• ES2315889: PFAS by LCMSMS (actual rate: 0.00%, expected rate: 5.00%)</li> <li>• ES2326636: PFAS by LCMSMS (actual rate: 0.00%, expected rate: 5.00%)</li> <li>• ES2326637: PFAS by LCMSMS (actual rate: 0.00%, expected rate: 5.00%)</li> </ul> <p>The precision and accuracy of the data can be assessed as acceptable based on method blanks, laboratory control spike and surrogate spike recoveries, which were reported at the required frequencies and within control limits, and the reported laboratory duplicates and matrix spikes which were within control limits.</p>
Method Blank	All method blank concentrations were reported <LOR (limit of reporting) for the analytes tested, meeting the project requirements. This is presented in the Quality Control Reports for both laboratories.
Laboratory duplicate RPDs	The reported laboratory duplicate's Relative Percentage Differences (RPDs) were within laboratory control limits. The laboratory duplicate RPDs are presented in the Quality Control Reports for both laboratories.

## DATA VALIDATION REPORT

LCS recovery	Laboratory control spike (LCS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.
Matrix spike recovery	<p>Matrix spike (MS) recoveries were within control limits with the exception of:</p> <p>Non-determined MS recoveries:</p> <ul style="list-style-type: none"> <li>• ES2315943: Perfluorohexane sulfonic acid (PFHxS), 0908_MW106D_230508</li> <li>• ES2315943: Perfluorooctane sulfonic acid (PFOS), 0908_MW106D_230508</li> <li>• ES2315943: Perfluorooctane sulfonic acid (PFOS), 0908_MW167_230510</li> </ul> <p>These non-determinations were due to background levels being greater than or equal to four times spike levels, which do not reflect method bias or affect data interpretation.</p>
Surrogate spike recovery	The reported surrogate spike recoveries were within laboratory control limits.
<b>QA/QC Data Evaluation</b>	
Comparison of Field Observations and Laboratory Results	No anomalies between field observations and analytical results were noted.
Anomalous data / Repeat Analysis	<p>Following the reporting of PFAS concentrations which were first-time detections at MW108D, MW162D (for QC215 sample) and MW317D, the primary and secondary laboratories were requested to repeat the analysis which confirmed the originally reported concentrations.</p> <p>Given the potentially increasing concentrations of PFAS in monitoring well MW270S, located south of the known plume extent, the primary laboratory was requested to repeat the analysis, which confirmed the originally reported concentrations.</p> <p>Additionally, MW270S and MW270D, were re-sampled on 9 August 2023 to confirm the results for samples collected on 16 May 2023. The new results for MW270S were generally consistent with the originally reported concentrations; however, PFOS concentrations were just above the LOR (0.03 µg/L) for the sample collected in May 2023 and below the LOR for the sample collected in August 2023. The new results for MW270D confirmed the originally reported concentration, with all PFAS concentrations below the LOR.</p>
Data transcription	A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and the tables generated by AECOM.
Limits of reporting	With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.
Rinsate Blank sample results	The concentrations of PFAS in the Rinsate Blank samples (Table D3) were below the LOR, indicating decontamination procedures were adequate.
RPDs for Field Duplicates / Triplicates	<p>RPDs for field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were reported within acceptable limits (<math>\leq 30\%</math>, or <math>\leq 50\%</math> for results 10-20 x LOR, or No Limit for results <math>&lt; 10</math> x LOR), with the exception of:</p> <p>Intra-laboratory duplicates (Field Duplicates) RPDs</p> <ul style="list-style-type: none"> <li>• SD005/QC113: Perfluorooctane sulfonic acid (PFOS): 67%</li> <li>• SW005/QC111: Perfluorooctane sulfonic acid (PFOS): 51%</li> <li>• MW126S/QC112: Perfluoropentane sulfonic acid (PFPeS): 51%</li> <li>• MW126S/QC112: Perfluoroheptane sulfonic acid (PFHpS): 71%</li> </ul>

## DATA VALIDATION REPORT

### Inter-laboratory duplicates (Field Triplicates) RPDs

- SD009/QC204: Perfluorooctane sulfonic acid (PFOS): 73%
- SD009/QC204: Perfluorohexane sulfonic acid (PFHxS): 61%
- SW005/QC211: Perfluorooctane sulfonic acid (PFOS): 39%
- MW281S/QC217: Perfluorooctane sulfonic acid (PFOS): 39%
- MW126S/QC212: Perfluoropentane sulfonic acid (PFPeS): 52%
- MW126S/QC212: Perfluoroheptane sulfonic acid (PFHpS): 87%

The elevated RPDs for groundwater and surface water duplicate pairs were generally marginally above acceptable limits and generally within the same order of magnitude, and therefore considered acceptable.

The elevated RPDs for sediment are likely to be attributed to the heterogeneous nature of the sediment sampled, and therefore are considered acceptable.

Where required for quantitative purposes, the highest concentrations from the primary and duplicate pairs were used in the report.

### Overall Assessment

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

#### Attached:

Table D1 – Water Duplicate RPDs

Table D2 – Soil and Sediment Duplicate RPDs

Table D3 – Rinsate Blank Results

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	ES2315943		ES2315943	323025		ES2315943	ES2315943		ES2315943	323025				
				Field ID	0908_MW256D_230508	0908_QC101_230508		0908_MW256S_230508	0908_QC201_230508		0908_MW406_230508	0908_QC100_230508		0908_MW406_230508	0908_QC200_230508		0908_MW406_230508	0908_QC200_230508	
				Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water		Water	Water	
				Date	08 May 2023	08 May 2023	RPD	08 May 2023	08 May 2023	RPD	08 May 2023	08 May 2023	RPD	08 May 2023	08 May 2023	RPD	08 May 2023	08 May 2023	RPD
<b>PFAS</b>																			
Perfluorooctanoic acid (PFOA)	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc			
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc			
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	0.03	0.02	40	0.03	0.04	29			
Sum of PFHxS and PFOS	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	0.03	0.02	40	0.03	0.04	29			
Sum of PFAS	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	0.03	0.02	40	0.03	0.04	29			
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																			
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																			
Perfluorobutanoic acid (PFBA)	µg/L	0.02			<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc			
Perfluoropentanoic acid (PFPeA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
Perfluorohexanoic acid (PFHxA)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluorononanoic acid (PFNA)	µg/L	0.01			<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc			
Perfluorodecanoic acid (PFDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc			
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc			
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc			
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01			<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01			<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02			<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02			<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc			
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																			
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc			
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc			
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc			
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc			

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	ES2315943	ES2315943	323025	ES2315943	323025	ES2315943	ES2315943	ES2315943	ES2315943	
				Field ID	0908_SW009_230508	0908_QC102_230508	0908_SW009_230508	0908_QC202_230508	0908_MW258S_230509	0908_QC203_230509	0908_SW014_230509	0908_QC107_230509			
				Matrix Type	Water	Water	Water	Water	Water	Water	Water	Water			
				Date	08 May 2023	08 May 2023	08 May 2023	08 May 2023	08 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023		
<b>PFAS</b>															
Perfluorooctanoic acid (PFOA)	µg/L	0.01		0.08	0.07	13	0.08	0.06	29	<0.01	<0.01	nc	0.03	0.03	0
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		4.36	4.38	0	4.36	3.9	11	<0.01	<0.01	nc	1.47	1.36	8
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		0.83	0.93	11	0.83	1.1	28	<0.01	<0.01	nc	0.39	0.42	7
Sum of PFHxS and PFOS	µg/L	0.01		5.19	5.31	2	5.19	4.9	6	<0.01	<0.01	nc	1.86	1.78	4
Sum of PFAS	µg/L	0.01		5.84	5.92	1	5.84	5.5	6	<0.01	<0.01	nc	2.11	2.01	5
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>															
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		0.06	0.06	0	0.06	0.05	18	<0.02	<0.01	nc	0.03	0.02	40
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		0.09	0.08	12	0.09	0.08	12	<0.02	<0.01	nc	0.03	0.03	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		0.08	0.08	0	0.08	0.07	13	<0.02	<0.01	nc	0.04	0.04	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>															
Perfluorobutanoic acid (PFBA)	µg/L	0.02		<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.1	nc
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		0.06	0.06	0	0.06	0.06	0	<0.02	<0.02	nc	0.02	0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		0.25	0.22	13	0.25	0.23	8	<0.02	<0.01	nc	0.10	0.09	11
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		0.03	0.04	29	0.03	0.03	0	<0.02	<0.01	nc	<0.02	<0.02	nc
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.02	nc
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.02	nc
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.05	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>															
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>															
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.05	nc

**Notes**  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	ES2315943	RPD	ES2315943	323025	RPD	ES2315943	ES2315943	RPD	ES2315943	323025	RPD
				Field ID	0908_MW255D_230509	0908_QC109_230509		0908_MW255D_230509	0908_QC209_230509		0908_SW005_230509	0908_QC111_230509		0908_SW005_230509	0908_QC211_230509	
				Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
				Date	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD
<b>PFAS</b>																
Perfluorooctanoic acid (PFOA)	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	0.37	0.22	<b>51</b>	0.37	0.25	<b>39</b>	
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	0.09	0.09	0	0.09	0.11	20	
Sum of PFHxS and PFOS	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	0.46	0.31	<b>39</b>	0.46	0.36	24	
Sum of PFAS	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	0.46	0.31	<b>39</b>	0.46	0.39	16	
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	0.01	nc	
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																
Perfluorobutanoic acid (PFBA)	µg/L	0.02		<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc	
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	0.02	nc	
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	

**Notes**  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	ES2315943		ES2315943	323025		ES2315943	ES2315943		ES2315943	ES2315943	
				Field ID	0908_MW162S_230509	0908_QC115_230509		0908_MW162D_230509	0908_QC215_230509		0908_MW121_230509	0908_QC106_230509		0908_MW121_230509	0908_QC105_230509	
				Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
				Date	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD	09 May 2023	09 May 2023	RPD
<b>PFAS</b>																
Perfluorooctanoic acid (PFOA)	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		<0.01	<0.01	nc	<0.01	<0.01	nc	0.02	<0.01	nc	0.02	<0.01	nc	
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		<0.01	<0.01	nc	<0.01	0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
Sum of PFHxS and PFOS	µg/L	0.01		<0.01	<0.01	nc	<0.01	0.01	nc	0.02	<0.01	nc	0.02	<0.01	nc	
Sum of PFAS	µg/L	0.01		<0.01	<0.01	nc	<0.01	0.01	nc	0.02	<0.01	nc	0.02	<0.01	nc	
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																
Perfluorobutanoic acid (PFBA)	µg/L	0.02		<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold



Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number		ES2315943		ES2315943		ES2315943		ES2315943		ES2315943	
				Field ID	0908_MW121_230509	0908_QC206_230509	0908_MW282S_230510	0908_QC117_230510	0908_MW281S_230510	0908_QC217_230510	0908_MW175D_230510	0908_QC119_230510			
				Matrix Type	Water	Water	Water	Water	Water	Water	Water	Water			
				Date	09 May 2023	09 May 2023	10 May 2023	10 May 2023	10 May 2023	10 May 2023	10 May 2023	10 May 2023			
<b>PFAS</b>															
Perfluorooctanoic acid (PFOA)	µg/L	0.01		<0.01	<0.01	nc	0.07	0.07	0	1.67	1.6	4	0.07	0.08	13
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		0.02	0.01	67	0.14	0.12	15	108	73	39	4.61	4.13	11
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		<0.01	<0.01	nc	3.33	3.27	2	21.8	20	9	1.05	1.13	7
Sum of PFHxS and PFOS	µg/L	0.01		0.02	0.01	67	3.47	3.39	2	130	93	33	5.66	5.26	7
Sum of PFAS	µg/L	0.01		0.02	0.01	67	4.49	4.49	0	143	110	26	6.32	6.18	2
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>															
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		<0.02	<0.01	nc	0.09	0.14	43	1.15	1.1	4	0.07	0.12	53
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		<0.02	<0.01	nc	0.15	0.15	0	1.78	2.2	21	0.10	0.12	18
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		<0.02	<0.01	nc	0.08	<0.02	nc	3.70	2.9	24	0.04	0.08	67
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>															
Perfluorobutanoic acid (PFBA)	µg/L	0.02		<0.1	<0.02	nc	<0.1	<0.1	nc	0.3	0.33	10	<0.1	<0.1	nc
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		<0.02	<0.02	nc	0.09	0.12	29	0.58	0.61	5	0.07	0.12	53
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		<0.02	<0.01	nc	0.45	0.52	14	3.41	3.5	3	0.27	0.35	26
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		<0.02	<0.01	nc	0.09	0.10	11	0.72	0.68	6	0.04	0.05	22
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	0.02	nc	<0.02	<0.02	nc
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>															
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>															
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	323025		ES2315943	ES2315943		ES2315943	323025		ES2315943	ES2315943	
				Field ID	0908_MW108D_230510	0908_QC219_230510		0908_SW047_230510	0908_QC108_230510		0908_SW047_230510	0908_QC208_230510		0908_MW126S_230511	0908_QC112_230511	
				Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
				Date	10 May 2023	10 May 2023	RPD	10 May 2023	10 May 2023	RPD	10 May 2023	10 May 2023	RPD	11 May 2023	11 May 2023	RPD
<b>PFAS</b>																
Perfluorooctanoic acid (PFOA)	µg/L	0.01		0.02	<0.01	nc	0.10	0.12	18	0.10	0.1	0	0.68	0.54	23	
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		<0.01	<0.01	nc	8.42	10.8	25	8.42	8.5	1	7.94	7.40	7	
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		1.56	1.6	3	0.94	1.19	23	0.94	1.2	24	13.1	13.3	2	
Sum of PFHxS and PFOS	µg/L	0.01		1.56	1.6	3	9.36	12.0	25	9.36	9.7	4	21.0	20.7	1	
Sum of PFAS	µg/L	0.01		2.15	2.1	2	10.1	12.9	24	10.1	10	1	28.0	28.1	0	
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		0.12	0.11	9	0.05	0.07	33	0.05	0.06	18	0.93	0.98	5	
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		0.19	0.18	5	0.08	0.10	22	0.08	0.09	12	0.55	0.93	<b>51</b>	
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		<0.02	<0.01	nc	0.08	0.13	48	0.08	0.08	0	0.51	1.07	<b>71</b>	
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																
Perfluorobutanoic acid (PFBA)	µg/L	0.02		<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	0.04	nc	0.2	0.2	0	
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		0.04	0.03	29	0.08	0.11	32	0.08	0.08	0	0.47	0.49	4	
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		0.18	0.16	12	0.22	0.27	20	0.22	0.23	4	3.25	2.81	15	
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		0.04	0.03	29	0.05	0.06	18	0.05	0.06	18	0.39	0.34	14	
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	0.07	0.08	13	0.07	0.08	13	<0.05	<0.05	nc	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2315943	323025		ES2315943	ES2315943		ES2315943	323025		ES2317415	ES2317415	
				Field ID	0908_MW126S_230511	0908_QC212_230511	RPD	0908_MW134D_230512	0908_QC114_230512	RPD	0908_MW134D_230512	0908_QC214_230512	RPD	0908_MW178_230517	0908_QC118_230517	RPD
				Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
				Date	11 May 2023	11 May 2023		12 May 2023	12 May 2023		12 May 2023	12 May 2023		17 May 2023	17 May 2023	
<b>PFAS</b>																
Perfluorooctanoic acid (PFOA)	µg/L	0.01		0.68	0.52	27	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01		7.94	7.0	13	0.02	<0.01	nc	0.02	0.01	67	0.08	0.10	22	
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01		13.1	16	20	0.02	0.02	0	0.02	0.02	0	0.15	0.18	18	
Sum of PFHxS and PFOS	µg/L	0.01		21.0	23	9	0.04	0.02	67	0.04	0.03	29	0.23	0.28	20	
Sum of PFAS	µg/L	0.01		28.0	30	7	0.04	0.02	67	0.04	0.03	29	0.35	0.44	23	
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01		0.93	0.84	10	<0.02	<0.02	nc	<0.02	<0.01	nc	0.05	0.06	18	
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01		0.55	0.94	<b>52</b>	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	0.04	29	
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01		0.51	1.3	<b>87</b>	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																
Perfluorobutanoic acid (PFBA)	µg/L	0.02		0.2	0.25	22	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	
Perfluoropentanoic acid (PFPeA)	µg/L	0.02		0.47	0.41	14	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorohexanoic acid (PFHxA)	µg/L	0.01		3.25	2.9	11	<0.02	<0.02	nc	<0.02	<0.01	nc	0.04	0.06	40	
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01		0.39	0.35	11	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	
Perfluorononanoic acid (PFNA)	µg/L	0.01		<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	
Perfluorodecanoic acid (PFDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02		<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01		<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02		<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02		<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05		<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05		<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02		<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05		<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

	Unit	LOR	RPD	Lab Report Number	ES2317415	323627		ES2317415	ES2317414		ES2317415	323627	
				Field ID	0908_MW178_230517	0908_QC218_230517		0908_MW315D_230518	0908_QC120_230518		0908_MW315D_230518	0908_QC220_230518	
				Matrix Type	Water	Water		Water	Water		Water	Water	
				Date	17 May 2023	17 May 2023	RPD	18 May 2023	18 May 2023	RPD	18 May 2023	18 May 2023	RPD
<b>PFAS</b>													
Perfluorooctanoic acid (PFOA)	µg/L	0.01			<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01			0.08	0.08	0	<0.01	<0.01	nc	<0.01	<0.01	nc
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01			0.15	0.24	46	0.16	0.20	22	0.16	0.19	17
Sum of PFHxS and PFOS	µg/L	0.01			0.23	0.32	<b>33</b>	0.16	0.20	22	0.16	0.19	17
Sum of PFAS	µg/L	0.01			0.35	0.50	<b>35</b>	0.30	0.37	21	0.30	0.32	6
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>													
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01			0.05	0.05	0	0.04	0.05	22	0.04	<0.01	nc
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01			0.03	0.06	67	0.03	0.04	29	0.03	0.05	50
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01			<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>													
Perfluorobutanoic acid (PFBA)	µg/L	0.02			<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc
Perfluoropentanoic acid (PFPeA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluorohexanoic acid (PFHxA)	µg/L	0.01			0.04	0.06	40	0.07	0.08	13	0.07	0.08	13
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01			<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc
Perfluorononanoic acid (PFNA)	µg/L	0.01			<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc
Perfluorodecanoic acid (PFDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02			<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02			<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05			<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01			<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01			<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02			<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02			<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>													
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02			<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05			<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05			<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02			<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05			<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc

**Notes**  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D2 - Soil Duplicate RPDs

Lab Report Number	ES2315943		ES2315943		RPD	ES2315943		323025		RPD	ES2315943		323025		RPD	ES2315943		323025		RPD																	
	Field ID	0908_SD009_230508	0908_QC104_230508	0908_QC104_230508		0908_QC204_230508	0908_SS102_230509	0908_QC103_230509	0908_SS101_230509		0908_QC205_230509	0908_SS101_230509	0908_QC205_230509	0908_SS101_230509		0908_QC205_230509	0908_SS101_230509	0908_QC205_230509	0908_SS101_230509		0908_QC205_230509	0908_SS101_230509	0908_QC205_230509														
		Matrix Type	Soil	Soil		Soil																		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		Date	08 May 2023	08 May 2023		08 May 2023																		08 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023	09 May 2023
Unit	LOR	RPD																																			
<b>PFAS</b>																																					
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	0.0131	0.0176	29	0.0131	0.028	<b>73</b>	0.0043	0.0049	13	0.0007	0.0009	25	0.0291	0.024	19																				
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	0.0008	0.0011	32	0.0008	0.0015	<b>61</b>	0.0034	0.0023	39	<0.0002	<0.0001	nc	0.0010	0.0011	10																				
Sum of PFHxS and PFOS	mg/kg	0.0001	0.0139	0.0187	29	0.0139	0.029	<b>70</b>	0.0077	0.0072	7	0.0007	0.0009	25	0.0301	0.025	19																				
Sum of PFAS	mg/kg	0.0001	0.0146	0.0195	29	0.0146	0.03	<b>69</b>	0.0087	0.0079	10	0.0007	0.0009	25	0.0301	0.025	19																				
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																																					
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	0.0004	0.0003	29	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	0.0003	0.0002	40	0.0003	0.0003	0	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	0.0003	40	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc																				
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																																					
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	<0.001	nc																				
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc																				
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	0.0002	nc	0.0004	0.0004	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluorononanoic acid (PFNA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0005	nc																				
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc																				
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc																				
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc																				
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0005	nc																				
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0006	<0.02	nc																				
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																																					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc																				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc																				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.001	nc																				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.001	nc																				
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																																					
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	0.0004	0.0006	40	0.0004	<0.001	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.01	nc																				
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0006	<0.01	nc																				
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.002	nc																				
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0006	<0.01	nc																				
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0006	<0.01	nc																				
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.002	nc																				
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0006	<0.05	nc																				

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D2 - Soil Duplicate RPDs

Lab Report Number Field ID Matrix Type Date	ES2315943		ES2315943		RPD	ES2315943		323025		RPD	ES2315943		ES2315943		RPD	ES2315943		323025		RPD	ES2317415		ES2317415		RPD				
	0908_SD005_230509		0908_QC113_230509			0908_SD005_230509		0908_QC213_230509			0908_SS107_230511		0908_QC110_230511			0908_SS107_230511		0908_QC210_230511			0908_SS107_230511		0908_QC210_230511			0908_SD059_230516		0908_QC116_230516	
	Soil		Soil			Soil		Soil			Soil		Soil			Soil		Soil			Soil		Soil			Soil		Soil	
	09 May 2023		09 May 2023			09 May 2023		09 May 2023			11 May 2023		11 May 2023			11 May 2023		11 May 2023			11 May 2023		11 May 2023			16 May 2023		16 May 2023	
	Unit	LOR	RPD																										
<b>PFAS</b>																													
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	0.0232	0.0116	<b>67</b>	0.0232	0.025	7	0.0026	0.0032	21	0.0026	0.0034	27	<0.0002	0.0005	nc	<0.0002	0.0005	nc	<0.0002	0.0005	nc	<0.0002	0.0005	nc			
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	0.0007	0.0004	55	0.0007	0.0006	15	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	0.0004	nc	<0.0002	0.0004	nc	<0.0002	0.0004	nc	<0.0002	0.0004	nc			
Sum of PFHxS and PFOS	mg/kg	0.0001	0.0239	0.0120	<b>66</b>	0.0239	0.025	4	0.0026	0.0032	21	0.0026	0.0034	27	<0.0002	0.0009	nc	<0.0002	0.0009	nc	<0.0002	0.0009	nc	<0.0002	0.0009	nc			
Sum of PFAS	mg/kg	0.0001	0.0239	0.0120	<b>66</b>	0.0239	0.026	8	0.0026	0.0032	21	0.0026	0.0037	<b>35</b>	<0.0002	0.0009	nc	<0.0002	0.0009	nc	<0.0002	0.0009	nc	<0.0002	0.0009	nc			
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																													
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	0.0003	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																													
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002	<0.001	<0.001	nc	<0.001	<0.0002	nc	<0.001	<0.001	nc	<0.001	0.0003	nc	<0.001	<0.001	nc	<0.001	0.0003	nc	<0.001	<0.001	nc	<0.001	<0.001	nc			
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorononanoic acid (PFNA)	mg/kg	0.0001	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0002	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																													
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.0002	nc	<0.0002	<0.001	nc	<0.0002	<0.001	nc	<0.0002	<0.001	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.001	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc			
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	nc			

Notes  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

		Lab Report Number	ES2317415	323627	
		Field ID	0908_SD059_230516	0908_QC216_230516	
		Matrix Type	Soil	Soil	
		Date	16 May 2023	16 May 2023	RPD
	Unit	LOR	RPD		
<b>PFAS</b>					
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	<0.0002	0.0003	nc
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	<0.0002	0.0003	nc
Sum of PFHxS and PFOS	mg/kg	0.0001	<0.0002	0.0006	nc
Sum of PFAS	mg/kg	0.0001	<0.0002	0.0006	nc
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>					
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>					
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002	<0.001	<0.0002	nc
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	nc
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluorononanoic acid (PFNA)	mg/kg	0.0001	<0.0002	<0.0001	nc
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0005	nc
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0005	nc
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0005	nc
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0002	<0.0002	<0.0005	nc
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.005	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001	<0.0005	<0.0001	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0001	<0.0005	<0.0001	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0002	<0.0005	<0.0002	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0002	<0.0005	<0.0002	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>					
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.001	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.001	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.001	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.001	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.005	nc

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D3 - Rinsate Blank Results

Lab Report Number	ES2315943	ES2315943	ES2315943	ES2315943	ES2315943	ES2317414	ES2317414	ES2317414	ES2317414	ES2317414	ES2317414	ES2326637
Field ID	0908_QC300_230508	0908_QC301_230509	0908_QC302_230510	0908_QC303_230511	0908_QC304_230512	0908_QC305_230515	0908_QC306_230516	0908_QC307_230517	0908_QC308_230518	0908_QC309_230519	0908_QC300_230809	
Matrix Type	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	
Date	08 May 2023	09 May 2023	10 May 2023	11 May 2023	12 May 2023	15 May 2023	16 May 2023	17 May 2023	18 May 2023	19 May 2023	09 Aug 2023	
Unit	LOR											
<b>PFAS</b>												
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>												
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>												
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>												
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>PFAS - Perfluoroalkyl Sulfonamides</b>												
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes  
LOR = Limit of Reporting



# Appendix E

## Laboratory Certificates



## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2315889**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : **[REDACTED]**  
**Address** : **17 WARABROOK BLVD**  
**NEWCASTLE Newcastle 2304**  
**Telephone** : **----**  
**Project** : **NSW\_0908\_PFASOMP\_23**  
**Order number** : **60612562\_2.1**  
**C-O-C number** : **52282**  
**Sampler** : **[REDACTED]**  
**Site** : **Offsite**  
**Quote number** : **SY/139/19 v4 60612562\_2.1**  
**No. of samples received** : **1**  
**No. of samples analysed** : **1**

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : **[REDACTED]**  
**Address** : **277-289 Woodpark Road Smithfield NSW Australia 2164**  
**Telephone** : **+61 2 8784 8555**  
**Date Samples Received** : **12-May-2023 14:00**  
**Date Analysis Commenced** : **23-May-2023**  
**Issue Date** : **29-May-2023 14:10**



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW024_230509	----	----	----	----
Sampling date / time		09-May-2023 11:53		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2315889-001	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.05</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.06</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW024_230509					
		Sampling date / time	09-May-2023 11:53					
Compound	CAS Number	LOR	Unit	ES2315889-001	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.11</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.11</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.11</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>107</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>112</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES2315889</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Client</b>	<b>: AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: [REDACTED]</b>	<b>Contact</b>	<b>: [REDACTED]</b>
<b>Address</b>	<b>: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: NSW_0908_PFASOMP_23</b>	<b>Date Samples Received</b>	<b>: 12-May-2023</b>
<b>Order number</b>	<b>: 60612562_2.1</b>	<b>Date Analysis Commenced</b>	<b>: 23-May-2023</b>
<b>C-O-C number</b>	<b>: 52282</b>	<b>Issue Date</b>	<b>: 29-May-2023</b>
<b>Sampler</b>	<b>: [REDACTED]</b>		
<b>Site</b>	<b>: Offsite</b>		
<b>Quote number</b>	<b>: SY/139/19 v4 60612562_2.1</b>		
<b>No. of samples received</b>	<b>: 1</b>		
<b>No. of samples analysed</b>	<b>: 1</b>		



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Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072506)</b>									
ES2315889-001	0908_SW024_230509	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317084-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.55	0.68	22.3	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.70	0.64	8.7	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	16.4	16.6	1.5	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	<0.05	60.1	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072506)</b>									
ES2315889-001	0908_SW024_230509	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072506) - continued</b>									
ES2317084-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	1.94	1.98	1.9	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	2.33	2.78	17.6	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	5.33	5.07	4.9	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.60	0.62	2.5	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.07	0.09	19.4	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.2	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072506)</b>									
ES2315889-001	0908_SW024_230509	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317084-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.12	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072506)</b>									
ES2315889-001	0908_SW024_230509	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072506) - continued</b>									
ES2315889-001	0908_SW024_230509	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317084-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.71	0.72	2.4	0% - 50%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072506)</b>									
ES2315889-001	0908_SW024_230509	EP231X: Sum of PFAS	----	0.01	µg/L	0.11	0.11	0.0	0% - 50%
ES2317084-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	28.8	29.2	1.6	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072506)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	74.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.3	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	107	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	103	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072506)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	76.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	76.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	77.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	79.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	75.7	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072506)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	75.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	76.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	114	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.7	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072506)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072506) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	78.6	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.7	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	79.8	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.2	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2315889	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 12-May-2023
Site	: Offsite	Issue Date	: 29-May-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: WATER

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
	0				
<b>Matrix Spikes (MS)</b>					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW024_230509	09-May-2023	26-May-2023	05-Nov-2023	✓	29-May-2023	05-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW024_230509	09-May-2023	26-May-2023	05-Nov-2023	✓	29-May-2023	05-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW024_230509	09-May-2023	26-May-2023	05-Nov-2023	✓	29-May-2023	05-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW024_230509	09-May-2023	26-May-2023	05-Nov-2023	✓	29-May-2023	05-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW024_230509	09-May-2023	26-May-2023	05-Nov-2023	✓	29-May-2023	05-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2315889**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 52282  
Site : Offsite  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 12-May-2023 14:00  
Client Requested Due Date : 30-May-2023

Issue Date : 23-May-2023  
Scheduled Reporting Date : **30-May-2023**

### Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Not Available  
Temperature : 4°C - Ice present  
No. of samples received / analysed : 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2315889-001	09-May-2023 11:53	0908_SW024_230509	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

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Email



RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

*P Tran*  
 12/5/2023 19:45

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: Offsite

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

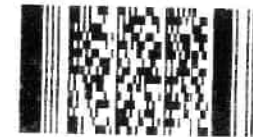
CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SW024_230509		09/05/2023 11:53 AM	WATER	ALS: 4 Non ALS: 0	Yes	-		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2315889**



Telephone : + 61-2-8784 8665

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SW024_230509	HDPE (no PTFE)	20 mL	00350822027037	Grey	No	
001	0908_SW024_230509	HDPE (no PTFE)	20 mL	00350822027011	Grey	No	
001	0908_SW024_230509	HDPE (no PTFE)	20 mL	00350822027340	Grey	No	
001	0908_SW024_230509	HDPE (no PTFE)	20 mL	00350822027291	Grey	No	

**Total Bottle Count: ALS: 4, Non ALS: 0**

**E-MAILED**  
LAB OF ORIGIN:  
NEWCASTLE


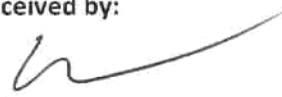


ALS Use Only

**Custody Document for Submissions via ALS Compass App**

Project: 60612562 Client: AECOM Project Manager:   
 ALS Compass COC Reference: 52282 # Samples: 23 15889  
51922 2315943  
 Turnaround Requirements: Standard Urgent

Special Instructions:	ALS Use Only	4.0	
	Custody seal intact?		YES NO <u>N/A</u>
	<u>Free ice</u> / frozen ice bricks upon receipt?		<u>YES</u> NO <u>N/A</u>
	Random sample temperature on receipt?		°C

**Custody:**

Relinquished by: 	Received by: 	Relinquished by: 	Received by: 
Date / Time: 1357 12.5.23.	Date / Time: 12.5.23 2pm	Date / Time: 12.5.23 5pm	Date / Time: 12/5/23 1945

**Fadi Soro**

---

**From:** [REDACTED]  
**Sent:** Tuesday, 23 May 2023 12:22 PM  
**To:** Samples Sydney  
**Subject:** FW: [EXTERNAL] - RE: - FW: CoC for ALS Workorder : ES2315889 | Your Reference: NSW\_0908\_PFASOMP\_23

Hi Team,

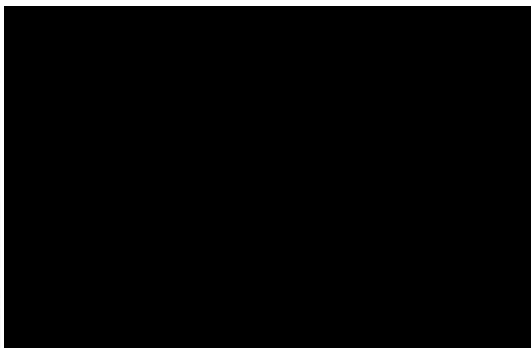
Can you please add analysis to the sample in ES2315889 as per the request below?

Thanks!

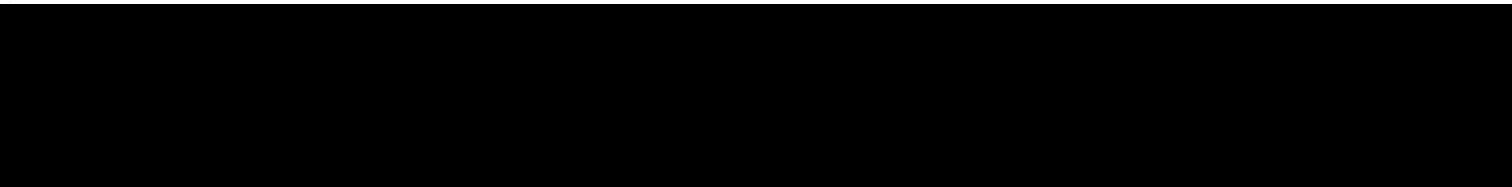
Kind regards,



right solutions.  
right partner.



[alsglobal.com](http://alsglobal.com)



[REDACTED] ES2315889 | Your Reference: NSW\_0908\_PFASOMP\_23

**CAUTION:** This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

[REDACTED]

Yes, that's correct. PFAS, standard LOR, 28-analytes.

[REDACTED]

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PS: I work flexibly. I'm sending this message now because it's a good time for me, but I don't expect you to read, respond or action it outside your own regular working hours.

[REDACTED]

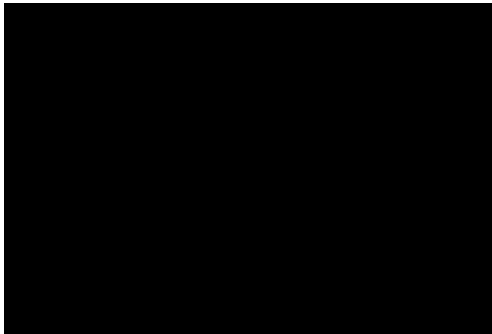
Can you confirm that you just require PFAS analysis analysis for this one?

Thanks!

Kind regards,



right solutions  
right partner



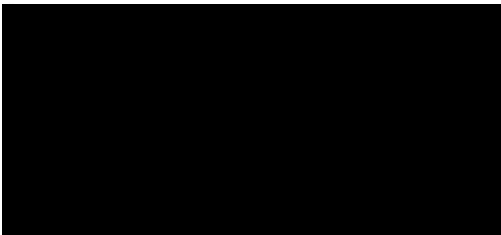
[alsglobal.com](http://alsglobal.com)



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Hi ALS,

Can we schedule this sample to be analysed, please?



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**From:** [angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com) <[angel-no-reply@alsglobal.com](mailto:angel-no-reply@alsglobal.com)>

**Sent:** Friday, 12 May 2023 10:33 PM

**Subject:** CoC for ALS Workorder : ES2315889 | Your Reference: NSW\_0908\_PFASOMP\_23



## **Deliverables for ALS Workorder ES2315889**

**Project: NSW\_0908\_PFASOMP\_23**

Dear [REDACTED]

Please find enclosed the following deliverables for **ES2315889**:

- ES2315889\_COC.pdf

Report Recipients



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---

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right partner.

**From:** [REDACTED]  
**Sent:** [REDACTED]  
**To:** Samples Sydney  
**Subject:** FW: [EXTERNAL] - RE: - FW: CoC for ALS Workorder : ES2315889 | Your Reference: NSW\_0908\_PFASOMP\_23

Hi Team,

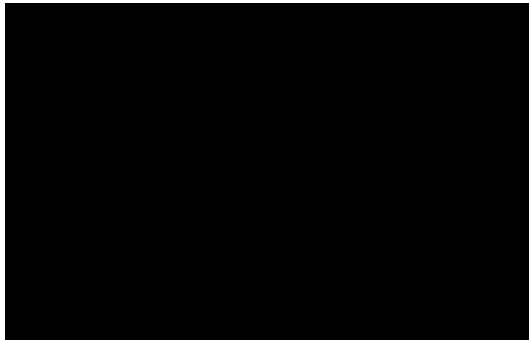
Can you please add analysis to the sample in ES2315889 as per the request below?

Thanks!

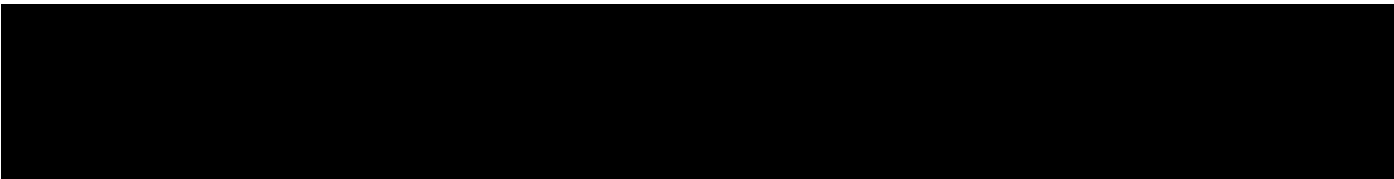
Kind regards,



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Yes, that's correct. PFAS, standard LOR, 28-analytes.



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PS: I work flexibly. I'm sending this message now because it's a good time for me, but I don't expect you to read, respond or action it outside your own regular working hours.



Can you confirm that you just require PFAS analysis analysis for this one?

Thanks!

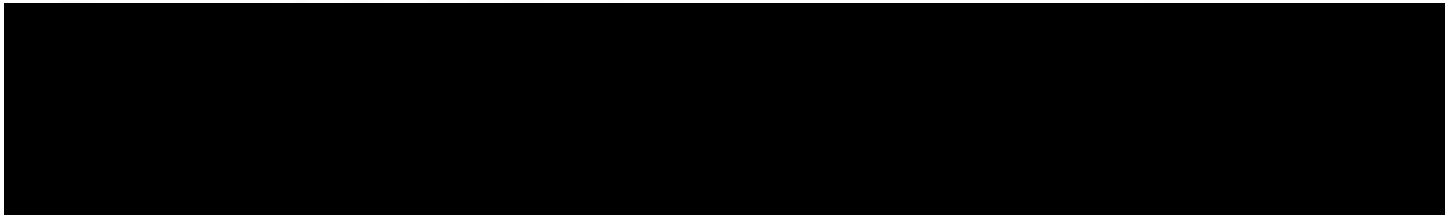
Kind regards,



right solutions.  
right partner.



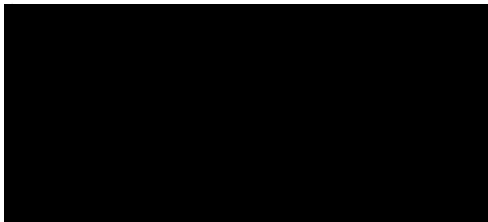
[alsglobal.com](http://alsglobal.com)



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Hi ALS,

Can we schedule this sample to be analysed, please?



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# CERTIFICATE OF ANALYSIS

**Work Order** : **ES2315943**  
**Amendment** : **1**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : **[REDACTED]**  
**Address** : **17 WARABROOK BLVD**  
**NEWCASTLE Newcastle 2304**  
**Telephone** : **----**  
**Project** : **NSW\_0908\_PFASOMP\_23**  
**Order number** : **60612562\_2.1**  
**C-O-C number** : **51922**  
**Sampler** : **[REDACTED]**  
**Site** : **0908**  
**Quote number** : **SY/139/19 v4 60612562\_2.1**  
**No. of samples received** : **172**  
**No. of samples analysed** : **172**

**Page** : 1 of 73  
**Laboratory** : Environmental Division Sydney  
**Contact** : **[REDACTED]**  
**Address** : **277-289 Woodpark Road Smithfield NSW Australia 2164**  
**Telephone** : **+61 2 8784 8555**  
**Date Samples Received** : **12-May-2023 14:00**  
**Date Analysis Commenced** : **15-May-2023**  
**Issue Date** : **31-May-2023 17:39**



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample #100, #103 confirmed by re-extraction and re-analysis.
- EP231X: LOR raised due to the high moisture content.
- Amendment (31/05/2023): This report has been amended as a result of changes to sample IDs and sample dates/times as per request from [REDACTED]. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_23050 8	0908_MW106S_23050 8	0908_MW107D_23051 2	0908_MW107S_23051 2	0908_MW108D_23051 0
Sampling date / time				08-May-2023 13:10	08-May-2023 12:43	12-May-2023 10:30	12-May-2023 10:30	10-May-2023 10:52
Compound	CAS Number	LOR	Unit	ES2315943-001 Result	ES2315943-002 Result	ES2315943-003 Result	ES2315943-004 Result	ES2315943-005 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.14	<0.02	<0.02	<0.02	0.12
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.12	<0.02	<0.02	<0.02	0.19
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.52	0.23	<0.01	<0.01	1.56
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.21	0.08	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	<0.02	<0.02	<0.02	0.04
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.27	<0.02	<0.02	0.02	0.18
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	<0.02	<0.02	<0.02	0.04
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.02	<0.01	<0.01	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_23050 8	0908_MW106S_23050 8	0908_MW107D_23051 2	0908_MW107S_23051 2	0908_MW108D_23051 0
Sampling date / time				08-May-2023 13:10	08-May-2023 12:43	12-May-2023 10:30	12-May-2023 10:30	10-May-2023 10:52
Compound	CAS Number	LOR	Unit	ES2315943-001	ES2315943-002	ES2315943-003	ES2315943-004	ES2315943-005
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>3.54</b>	<b>0.33</b>	<0.01	<b>0.02</b>	<b>2.15</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>2.73</b>	<b>0.31</b>	<0.01	<0.01	<b>1.56</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>3.32</b>	<b>0.33</b>	<0.01	<b>0.02</b>	<b>1.96</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.9</b>	<b>102</b>	<b>95.4</b>	<b>90.1</b>	<b>97.8</b>
13C8-PFOA	----	0.02	%	<b>95.1</b>	<b>101</b>	<b>101</b>	<b>95.0</b>	<b>94.9</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_230510	0908_MW471_230510	0908_MW121_230509	0908_MW123_230509	0908_MW124_230509
				0				
Sampling date / time				10-May-2023 10:59	10-May-2023 09:54	09-May-2023 15:10	09-May-2023 13:10	09-May-2023 14:54
Compound	CAS Number	LOR	Unit	ES2315943-006	ES2315943-007	ES2315943-008	ES2315943-009	ES2315943-010
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.44	<0.02	0.03	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.11	0.60	<0.02	0.04	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.86	6.98	<0.01	0.39	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.88	0.57	<0.02	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.03	27.8	0.02	0.41	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.2	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.26	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.27	0.88	<0.02	0.05	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	0.18	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.42	0.56	<0.01	0.02	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_23051 0	0908_MW471_230510	0908_MW121_230509	0908_MW123_230509	0908_MW124_230509
Sampling date / time				10-May-2023 10:59	10-May-2023 09:54	09-May-2023 15:10	09-May-2023 13:10	09-May-2023 14:54
Compound	CAS Number	LOR	Unit	ES2315943-006	ES2315943-007	ES2315943-008	ES2315943-009	ES2315943-010
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>8.70</b>	<b>38.5</b>	<b>0.02</b>	<b>0.97</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>6.89</b>	<b>34.8</b>	<b>0.02</b>	<b>0.80</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>7.71</b>	<b>37.3</b>	<b>0.02</b>	<b>0.90</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>108</b>	<b>96.5</b>	<b>96.7</b>	<b>94.7</b>	<b>102</b>
13C8-PFOA	----	0.02	%	<b>101</b>	<b>100</b>	<b>104</b>	<b>104</b>	<b>104</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW125D_23050 9	0908_MW125S_23050 9	0908_MW126D_23051 1	0908_MW126S_23051 1	0908_MW128D_23050 9
Sampling date / time				09-May-2023 14:39	09-May-2023 14:34	11-May-2023 13:43	11-May-2023 13:45	09-May-2023 11:45
Compound	CAS Number	LOR	Unit	ES2315943-011 Result	ES2315943-012 Result	ES2315943-013 Result	ES2315943-014 Result	ES2315943-015 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.13	0.93	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.55	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	13.1	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.51	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	7.94	0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.47	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	3.25	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.39	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.68	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW125D_23050 9	0908_MW125S_23050 9	0908_MW126D_23051 1	0908_MW126S_23051 1	0908_MW128D_23050 9
Sampling date / time				09-May-2023 14:39	09-May-2023 14:34	11-May-2023 13:43	11-May-2023 13:45	09-May-2023 11:45
Compound	CAS Number	LOR	Unit	ES2315943-011 Result	ES2315943-012 Result	ES2315943-013 Result	ES2315943-014 Result	ES2315943-015 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<b>0.13</b>	<b>28.0</b>	<b>0.02</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>21.0</b>	<b>0.02</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<b>0.13</b>	<b>27.0</b>	<b>0.02</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.0</b>	<b>101</b>	<b>92.6</b>	<b>104</b>	<b>95.5</b>
13C8-PFOA	----	0.02	%	<b>97.0</b>	<b>103</b>	<b>95.3</b>	<b>103</b>	<b>100</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW128S_23050 9	0908_MW130D_23051 1	0908_MW130S_23051 1	0908_MW132D_23051 1	0908_MW132S_23051 1
Sampling date / time				09-May-2023 11:34	11-May-2023 13:50	11-May-2023 13:53	11-May-2023 11:56	11-May-2023 12:04
Compound	CAS Number	LOR	Unit	ES2315943-016 Result	ES2315943-017 Result	ES2315943-018 Result	ES2315943-019 Result	ES2315943-020 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.32	0.05
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.10	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.89	0.22
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW128S_23050 9	0908_MW130D_23051 1	0908_MW130S_23051 1	0908_MW132D_23051 1	0908_MW132S_23051 1
Sampling date / time				09-May-2023 11:34	11-May-2023 13:50	11-May-2023 13:53	11-May-2023 11:56	11-May-2023 12:04
Compound	CAS Number	LOR	Unit	ES2315943-016 Result	ES2315943-017 Result	ES2315943-018 Result	ES2315943-019 Result	ES2315943-020 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	1.42	0.27
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	1.21	0.27
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	1.32	0.27
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	99.9	98.7	96.7	92.9	104
13C8-PFOA	----	0.02	%	100	96.7	102	99.1	96.7



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW134D_23051 2	0908_MW134I_23051 2	0908_MW146AD_230 509	0908_MW146S_23050 9	0908_MW150D_23051 0
Sampling date / time				12-May-2023 08:36	12-May-2023 08:48	09-May-2023 14:00	09-May-2023 14:00	10-May-2023 15:13
Compound	CAS Number	LOR	Unit	ES2315943-021 Result	ES2315943-022 Result	ES2315943-023 Result	ES2315943-024 Result	ES2315943-025 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.18
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.22
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.03	<0.01	<0.01	1.81
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.06
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	<0.01	<0.01	0.25
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.06
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.28
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.04
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.06
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW134D_23051 2	0908_MW134I_23051 2	0908_MW146AD_230 509	0908_MW146S_23050 9	0908_MW150D_23051 0
Sampling date / time				12-May-2023 08:36	12-May-2023 08:48	09-May-2023 14:00	09-May-2023 14:00	10-May-2023 15:13
Compound	CAS Number	LOR	Unit	ES2315943-021 Result	ES2315943-022 Result	ES2315943-023 Result	ES2315943-024 Result	ES2315943-025 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.04</b>	<b>0.04</b>	<0.01	<0.01	<b>2.96</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.04</b>	<b>0.04</b>	<0.01	<0.01	<b>2.06</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.04</b>	<b>0.04</b>	<0.01	<0.01	<b>2.68</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>93.7</b>	<b>94.5</b>	<b>93.1</b>	<b>93.3</b>	<b>97.0</b>
13C8-PFOA	----	0.02	%	<b>95.9</b>	<b>97.4</b>	<b>99.6</b>	<b>94.6</b>	<b>98.6</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW150S_23051 0	0908_MW155_230508	0908_MW156D_23050 8	0908_MW158D_23050 8	0908_MW158S_23050 8
Sampling date / time				10-May-2023 15:13	08-May-2023 12:17	08-May-2023 09:45	08-May-2023 15:00	08-May-2023 15:06
Compound	CAS Number	LOR	Unit	ES2315943-026 Result	ES2315943-027 Result	ES2315943-028 Result	ES2315943-029 Result	ES2315943-030 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.01</b>	<b>0.20</b>	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.03</b>	<b>1.23</b>	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<b>0.2</b>	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<b>0.20</b>	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<b>0.12</b>	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<b>0.08</b>	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<b>0.08</b>	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW150S_23051 0	0908_MW155_230508	0908_MW156D_23050 8	0908_MW158D_23050 8	0908_MW158S_23050 8
Sampling date / time				10-May-2023 15:13	08-May-2023 12:17	08-May-2023 09:45	08-May-2023 15:00	08-May-2023 15:06
Compound	CAS Number	LOR	Unit	ES2315943-026 Result	ES2315943-027 Result	ES2315943-028 Result	ES2315943-029 Result	ES2315943-030 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.04</b>	<b>2.11</b>	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.04</b>	<b>1.43</b>	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.04</b>	<b>2.11</b>	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>93.9</b>	<b>92.0</b>	<b>106</b>	<b>94.8</b>	<b>92.3</b>
13C8-PFOA	----	0.02	%	<b>96.8</b>	<b>102</b>	<b>95.8</b>	<b>101</b>	<b>98.9</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW159D_23051 1	0908_MW159S_23051 1	0908_MW160_230511	0908_MW161D_23051 1	0908_MW161S_23051 1
Sampling date / time				11-May-2023 08:58	11-May-2023 08:57	11-May-2023 11:20	11-May-2023 14:34	11-May-2023 14:34
Compound	CAS Number	LOR	Unit	ES2315943-031	ES2315943-032	ES2315943-033	ES2315943-034	ES2315943-035
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.06	0.03
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.08	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.03	0.74	0.72
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.06	0.04
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	1.89	1.84
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.05	0.04
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.15	0.12
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.05	0.04
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW159D_23051 1	0908_MW159S_23051 1	0908_MW160_230511	0908_MW161D_23051 1	0908_MW161S_23051 1
Sampling date / time				11-May-2023 08:58	11-May-2023 08:57	11-May-2023 11:20	11-May-2023 14:34	11-May-2023 14:34
Compound	CAS Number	LOR	Unit	ES2315943-031 Result	ES2315943-032 Result	ES2315943-033 Result	ES2315943-034 Result	ES2315943-035 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<b>0.03</b>	<b>3.11</b>	<b>2.91</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<b>0.03</b>	<b>2.63</b>	<b>2.56</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<b>0.03</b>	<b>2.97</b>	<b>2.81</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>105</b>	<b>94.7</b>	<b>99.9</b>	<b>95.5</b>	<b>93.5</b>
13C8-PFOA	----	0.02	%	<b>97.4</b>	<b>98.3</b>	<b>99.0</b>	<b>93.4</b>	<b>98.0</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_23050 9	0908_MW162S_23050 9	0908_MW163_230509	0908_MW166_230510	0908_MW167_230510
Sampling date / time				09-May-2023 13:35	09-May-2023 13:22	09-May-2023 13:11	10-May-2023 14:06	10-May-2023 13:50
Compound	CAS Number	LOR	Unit	ES2315943-036	ES2315943-037	ES2315943-038	ES2315943-039	ES2315943-040
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.05
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	0.27	0.41
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.04	0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	18.6	29.3
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.05	0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.05	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW162D_23050 9	0908_MW162S_23050 9	0908_MW163_230509	0908_MW166_230510	0908_MW167_230510
Sampling date / time				09-May-2023 13:35	09-May-2023 13:22	09-May-2023 13:11	10-May-2023 14:06	10-May-2023 13:50
Compound	CAS Number	LOR	Unit	ES2315943-036	ES2315943-037	ES2315943-038	ES2315943-039	ES2315943-040
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	19.0	29.8
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	18.9	29.7
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	19.0	29.8
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	93.7	99.0	102	114	114
13C8-PFOA	----	0.02	%	97.3	98.8	99.6	99.8	102



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW168_230510	0908_MW169D_23051 0	0908_MW169S_23051 0	0908_MW171D_23051 0	0908_MW171S_23051 0
Sampling date / time				10-May-2023 14:23	10-May-2023 13:34	10-May-2023 13:34	10-May-2023 11:36	10-May-2023 11:36
Compound	CAS Number	LOR	Unit	ES2315943-041	ES2315943-042	ES2315943-043	ES2315943-044	ES2315943-045
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	<0.02	<0.02	0.14	0.04
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.19	<0.02	<0.02	0.12	0.06
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	6.17	0.06	0.16	0.47	0.79
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.23	<0.02	<0.02	<0.02	0.15
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	44.4	0.06	0.07	0.04	0.63
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.06	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	<0.02	<0.02	0.05	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.54	<0.02	0.07	0.18	0.09
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.15	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.44	<0.01	<0.01	<0.01	0.07
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.03	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	0.06	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW168_230510	0908_MW169D_23051 0	0908_MW169S_23051 0	0908_MW171D_23051 0	0908_MW171S_23051 0
Sampling date / time				10-May-2023 14:23	10-May-2023 13:34	10-May-2023 13:34	10-May-2023 11:36	10-May-2023 11:36
Compound	CAS Number	LOR	Unit	ES2315943-041	ES2315943-042	ES2315943-043	ES2315943-044	ES2315943-045
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>52.4</b>	<b>0.12</b>	<b>0.30</b>	<b>1.00</b>	<b>1.83</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>50.6</b>	<b>0.12</b>	<b>0.23</b>	<b>0.51</b>	<b>1.42</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>51.8</b>	<b>0.12</b>	<b>0.30</b>	<b>0.88</b>	<b>1.62</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>103</b>	<b>113</b>	<b>110</b>	<b>114</b>	<b>120</b>
13C8-PFOA	----	0.02	%	<b>97.7</b>	<b>97.6</b>	<b>96.9</b>	<b>98.4</b>	<b>103</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW172_230510	0908_MW175D_23051 0	0908_MW179D_23051 0	0908_MW179S_23051 0	0908_MW188S_23051 1
Sampling date / time				10-May-2023 11:54	10-May-2023 10:22	10-May-2023 14:56	10-May-2023 14:48	11-May-2023 11:03
Compound	CAS Number	LOR	Unit	ES2315943-046	ES2315943-047	ES2315943-048	ES2315943-049	ES2315943-050
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.07	0.13	0.04	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	0.10	0.19	0.09	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	1.05	1.33	1.52	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.04	0.06	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.07	4.61	1.17	0.24	0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.1	<0.1	0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.44	0.07	0.06	0.14	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.13	0.27	0.22	0.33	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.04	0.03	0.07	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.07	0.06	0.37	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW172_230510	0908_MW175D_23051 0	0908_MW179D_23051 0	0908_MW179S_23051 0	0908_MW188S_23051 1
Sampling date / time				10-May-2023 11:54	10-May-2023 10:22	10-May-2023 14:56	10-May-2023 14:48	11-May-2023 11:03
Compound	CAS Number	LOR	Unit	ES2315943-046	ES2315943-047	ES2315943-048	ES2315943-049	ES2315943-050
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.92</b>	<b>6.32</b>	<b>3.25</b>	<b>2.93</b>	<b>0.02</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.99</b>	<b>5.66</b>	<b>2.50</b>	<b>1.76</b>	<b>0.02</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.84</b>	<b>6.18</b>	<b>3.00</b>	<b>2.81</b>	<b>0.02</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>104</b>	<b>115</b>	<b>115</b>	<b>111</b>	<b>105</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>99.6</b>	<b>102</b>	<b>102</b>	<b>98.8</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW195_230509	0908_MW196_230510	0908_MW198_230510	0908_MW200_230510	0908_MW201D_230510
Sampling date / time				09-May-2023 10:19	10-May-2023 11:03	10-May-2023 08:35	10-May-2023 09:45	10-May-2023 09:06
Compound	CAS Number	LOR	Unit	ES2315943-051	ES2315943-052	ES2315943-053	ES2315943-054	ES2315943-055
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.07	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.10	0.56	1.84	0.04	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.07	0.04	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	13.9	3.30	0.23	0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.03	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.12	0.04	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.10	0.04	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW195_230509	0908_MW196_230510	0908_MW198_230510	0908_MW200_230510	0908_MW201D_230510
Sampling date / time				09-May-2023 10:19	10-May-2023 11:03	10-May-2023 08:35	10-May-2023 09:45	10-May-2023 09:06
Compound	CAS Number	LOR	Unit	ES2315943-051	ES2315943-052	ES2315943-053	ES2315943-054	ES2315943-055
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.21</b>	<b>14.8</b>	<b>5.33</b>	<b>0.27</b>	<b>0.01</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.20</b>	<b>14.5</b>	<b>5.14</b>	<b>0.27</b>	<b>0.01</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.21</b>	<b>14.7</b>	<b>5.22</b>	<b>0.27</b>	<b>0.01</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>118</b>	<b>119</b>	<b>106</b>	<b>101</b>	<b>90.3</b>
13C8-PFOA	----	0.02	%	<b>102</b>	<b>102</b>	<b>98.7</b>	<b>95.0</b>	<b>95.8</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW201S_23051 0	0908_MW202D_23051 0	0908_MW202S_23051 0	0908_MW208_230508	0908_MW210D_23050 8
Sampling date / time				10-May-2023 09:27	10-May-2023 14:20	10-May-2023 14:26	08-May-2023 11:14	08-May-2023 11:39
Compound	CAS Number	LOR	Unit	ES2315943-056 Result	ES2315943-057 Result	ES2315943-058 Result	ES2315943-059 Result	ES2315943-060 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.03	<0.02	0.08	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.04	<0.02	0.15	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.48	0.41	0.10	2.87	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	0.05	<0.02	0.61	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.08	0.52	0.20	11.0	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.16	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.07	<0.02	0.58	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.13	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.02	<0.01	0.26	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW201S_23051 0	0908_MW202D_23051 0	0908_MW202S_23051 0	0908_MW208_230508	0908_MW210D_23050 8
Sampling date / time				10-May-2023 09:27	10-May-2023 14:20	10-May-2023 14:26	08-May-2023 11:14	08-May-2023 11:39
Compound	CAS Number	LOR	Unit	ES2315943-056	ES2315943-057	ES2315943-058	ES2315943-059	ES2315943-060
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.68</b>	<b>1.14</b>	<b>0.30</b>	<b>15.9</b>	<b>0.01</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.56</b>	<b>0.93</b>	<b>0.30</b>	<b>13.9</b>	<b>0.01</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.63</b>	<b>1.05</b>	<b>0.30</b>	<b>15.1</b>	<b>0.01</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.2</b>	<b>104</b>	<b>91.9</b>	<b>90.9</b>	<b>92.2</b>
13C8-PFOA	----	0.02	%	<b>94.6</b>	<b>95.0</b>	<b>93.0</b>	<b>98.3</b>	<b>101</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW210S_23050 8	0908_MW212_230508	0908_MW232D_23051 1	0908_MW232S_23051 1	0908_MW240D_23051 0
Sampling date / time				08-May-2023 11:29	08-May-2023 11:58	11-May-2023 13:15	11-May-2023 13:21	10-May-2023 09:00
Compound	CAS Number	LOR	Unit	ES2315943-061 Result	ES2315943-062 Result	ES2315943-063 Result	ES2315943-064 Result	ES2315943-065 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.10	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.10	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.89	0.06	<0.01	<0.01	0.08
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.07	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	8.59	0.44	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.27	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW210S_23050 8	0908_MW212_230508	0908_MW232D_23051 1	0908_MW232S_23051 1	0908_MW240D_23051 0
Sampling date / time				08-May-2023 11:29	08-May-2023 11:58	11-May-2023 13:15	11-May-2023 13:21	10-May-2023 09:00
Compound	CAS Number	LOR	Unit	ES2315943-061	ES2315943-062	ES2315943-063	ES2315943-064	ES2315943-065
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>10.2</b>	<b>0.50</b>	<0.01	<0.01	<b>0.08</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>9.48</b>	<b>0.50</b>	<0.01	<0.01	<b>0.08</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>10.0</b>	<b>0.50</b>	<0.01	<0.01	<b>0.08</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.4</b>	<b>93.2</b>	<b>93.5</b>	<b>98.3</b>	<b>97.1</b>
13C8-PFOA	----	0.02	%	<b>101</b>	<b>99.1</b>	<b>99.0</b>	<b>99.8</b>	<b>99.9</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_23051 2	0908_MW241S_23051 2	0908_MW244D_23051 0	0908_MW244S_23051 0	0908_MW245D_23051 0
Sampling date / time				12-May-2023 10:46	12-May-2023 10:46	10-May-2023 10:22	10-May-2023 10:17	10-May-2023 11:51
Compound	CAS Number	LOR	Unit	ES2315943-066 Result	ES2315943-067 Result	ES2315943-068 Result	ES2315943-069 Result	ES2315943-070 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.02</b>	<b>0.02</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_23051 2	0908_MW241S_23051 2	0908_MW244D_23051 0	0908_MW244S_23051 0	0908_MW245D_23051 0
Sampling date / time				12-May-2023 10:46	12-May-2023 10:46	10-May-2023 10:22	10-May-2023 10:17	10-May-2023 11:51
Compound	CAS Number	LOR	Unit	ES2315943-066 Result	ES2315943-067 Result	ES2315943-068 Result	ES2315943-069 Result	ES2315943-070 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.02</b>	<b>0.02</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.02</b>	<b>0.02</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.02</b>	<b>0.02</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>94.5</b>	<b>97.3</b>	<b>90.7</b>	<b>89.8</b>	<b>93.9</b>
13C8-PFOA	----	0.02	%	<b>96.8</b>	<b>102</b>	<b>101</b>	<b>98.9</b>	<b>99.4</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW245S_23051 0	0908_MW247D_23050 8	0908_MW247S_23050 8	0908_MW252S_23051 1	0908_MW255D_23050 9
Sampling date / time				10-May-2023 12:00	08-May-2023 14:47	08-May-2023 14:37	11-May-2023 10:32	09-May-2023 10:28
Compound	CAS Number	LOR	Unit	ES2315943-071	ES2315943-072	ES2315943-073	ES2315943-074	ES2315943-075
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.04	0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.04	0.54	0.39	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.07	0.24	0.93	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.10	0.03	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.02	0.02	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW245S_23051 0	0908_MW247D_23050 8	0908_MW247S_23050 8	0908_MW252S_23051 1	0908_MW255D_23050 9
Sampling date / time				10-May-2023 12:00	08-May-2023 14:47	08-May-2023 14:37	11-May-2023 10:32	09-May-2023 10:28
Compound	CAS Number	LOR	Unit	ES2315943-071 Result	ES2315943-072 Result	ES2315943-073 Result	ES2315943-074 Result	ES2315943-075 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.03</b>	<b>0.11</b>	<b>1.02</b>	<b>1.39</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.03</b>	<b>0.11</b>	<b>0.78</b>	<b>1.32</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.03</b>	<b>0.11</b>	<b>0.96</b>	<b>1.37</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>100</b>	<b>93.9</b>	<b>98.1</b>	<b>95.4</b>	<b>95.6</b>
13C8-PFOA	----	0.02	%	<b>98.4</b>	<b>97.8</b>	<b>102</b>	<b>99.7</b>	<b>97.3</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW255S_23050 9	0908_MW256D_23050 8	0908_MW256S_23050 8	0908_MW257D_23050 8	0908_MW257S_23050 8
Sampling date / time				09-May-2023 10:36	08-May-2023 09:43	08-May-2023 10:05	08-May-2023 09:13	08-May-2023 09:21
Compound	CAS Number	LOR	Unit	ES2315943-076 Result	ES2315943-077 Result	ES2315943-078 Result	ES2315943-079 Result	ES2315943-080 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW255S_23050 9	0908_MW256D_23050 8	0908_MW256S_23050 8	0908_MW257D_23050 8	0908_MW257S_23050 8
Sampling date / time				09-May-2023 10:36	08-May-2023 09:43	08-May-2023 10:05	08-May-2023 09:13	08-May-2023 09:21
Compound	CAS Number	LOR	Unit	ES2315943-076 Result	ES2315943-077 Result	ES2315943-078 Result	ES2315943-079 Result	ES2315943-080 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>97.4</b>	<b>91.6</b>	<b>97.3</b>	<b>94.1</b>	<b>92.4</b>
13C8-PFOA	----	0.02	%	<b>95.1</b>	<b>96.5</b>	<b>98.9</b>	<b>103</b>	<b>102</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_23050 9	0908_MW258S_23050 9	0908_MW260D_23050 8	0908_MW260S_23050 8	0908_MW263D_23050 9
Sampling date / time				09-May-2023 09:35	09-May-2023 09:19	08-May-2023 10:35	08-May-2023 10:26	09-May-2023 11:30
Compound	CAS Number	LOR	Unit	ES2315943-081	ES2315943-082	ES2315943-083	ES2315943-084	ES2315943-085
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<b>0.01</b>	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.04</b>	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_23050 9	0908_MW258S_23050 9	0908_MW260D_23050 8	0908_MW260S_23050 8	0908_MW263D_23050 9
Sampling date / time				09-May-2023 09:35	09-May-2023 09:19	08-May-2023 10:35	08-May-2023 10:26	09-May-2023 11:30
Compound	CAS Number	LOR	Unit	ES2315943-081	ES2315943-082	ES2315943-083	ES2315943-084	ES2315943-085
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<b>0.05</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<b>0.05</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<b>0.05</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.6</b>	<b>95.3</b>	<b>91.2</b>	<b>90.6</b>	<b>90.8</b>
13C8-PFOA	----	0.02	%	<b>97.4</b>	<b>101</b>	<b>99.9</b>	<b>95.7</b>	<b>96.4</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_23050 9	0908_MW264D_23051 2	0908_MW264S_23051 2	0908_MW278D_23051 1	0908_MW278S_23051 1
Sampling date / time				09-May-2023 11:32	12-May-2023 09:15	12-May-2023 09:15	11-May-2023 14:37	11-May-2023 14:47
Compound	CAS Number	LOR	Unit	ES2315943-086 Result	ES2315943-087 Result	ES2315943-088 Result	ES2315943-089 Result	ES2315943-090 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_23050 9	0908_MW264D_23051 2	0908_MW264S_23051 2	0908_MW278D_23051 1	0908_MW278S_23051 1
Sampling date / time				09-May-2023 11:32	12-May-2023 09:15	12-May-2023 09:15	11-May-2023 14:37	11-May-2023 14:47
Compound	CAS Number	LOR	Unit	ES2315943-086	ES2315943-087	ES2315943-088	ES2315943-089	ES2315943-090
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<b>0.02</b>	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>95.5</b>	<b>89.3</b>	<b>91.0</b>	<b>86.3</b>	<b>91.3</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>95.7</b>	<b>92.4</b>	<b>97.5</b>	<b>97.4</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW279S_23050 9	0908_MW281S_23051 0	0908_MW282S_23051 0	0908_MW316D_23050 9	0908_MW317D_23051 2
Sampling date / time				09-May-2023 10:55	10-May-2023 09:23	10-May-2023 09:10	09-May-2023 13:18	12-May-2023 09:10
Compound	CAS Number	LOR	Unit	ES2315943-091	ES2315943-092	ES2315943-093	ES2315943-094	ES2315943-095
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.12	1.15	0.09	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.16	1.78	0.15	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.98	21.8	3.33	<0.01	0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	3.70	0.08	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.38	108	0.14	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.3	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	0.58	0.09	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.42	3.41	0.45	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.72	0.09	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	1.67	0.07	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW279S_23050 9	0908_MW281S_23051 0	0908_MW282S_23051 0	0908_MW316D_23050 9	0908_MW317D_23051 2
Sampling date / time				09-May-2023 10:55	10-May-2023 09:23	10-May-2023 09:10	09-May-2023 13:18	12-May-2023 09:10
Compound	CAS Number	LOR	Unit	ES2315943-091	ES2315943-092	ES2315943-093	ES2315943-094	ES2315943-095
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>3.20</b>	<b>143</b>	<b>4.49</b>	<0.01	<b>0.02</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>2.36</b>	<b>130</b>	<b>3.47</b>	<0.01	<b>0.02</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>3.01</b>	<b>138</b>	<b>4.26</b>	<0.01	<b>0.02</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.6</b>	<b>92.6</b>	<b>96.1</b>	<b>93.0</b>	<b>95.0</b>
13C8-PFOA	----	0.02	%	<b>102</b>	<b>96.9</b>	<b>100</b>	<b>102</b>	<b>99.0</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_23051 2	0908_MW318D_23051 1	0908_MW318S_23051 1	0908_MW406_230508	0908_MW433_230509
Sampling date / time				12-May-2023 09:23	11-May-2023 11:03	11-May-2023 11:03	08-May-2023 10:43	09-May-2023 14:18
Compound	CAS Number	LOR	Unit	ES2315943-096 Result	ES2315943-097 Result	ES2315943-098 Result	ES2315943-099 Result	ES2315943-100 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.09	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.08	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.28	0.02	0.03	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.04	<0.01	<0.01	0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.12	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW317S_23051 2	0908_MW318D_23051 1	0908_MW318S_23051 1	0908_MW406_230508	0908_MW433_230509
Sampling date / time				12-May-2023 09:23	11-May-2023 11:03	11-May-2023 11:03	08-May-2023 10:43	09-May-2023 14:18
Compound	CAS Number	LOR	Unit	ES2315943-096	ES2315943-097	ES2315943-098	ES2315943-099	ES2315943-100
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.06</b>	<b>0.63</b>	<b>0.02</b>	<b>0.03</b>	<b>0.03</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.06</b>	<b>0.32</b>	<b>0.02</b>	<b>0.03</b>	<b>0.03</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.06</b>	<b>0.55</b>	<b>0.02</b>	<b>0.03</b>	<b>0.03</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.0</b>	<b>96.8</b>	<b>101</b>	<b>102</b>	<b>110</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>100</b>	<b>104</b>	<b>98.9</b>	<b>103</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW466_230510	0908_MW468_230510	0908_MW829_230511	0908_QC100_230508	0908_QC101_230508
Sampling date / time				10-May-2023 10:14	10-May-2023 10:02	11-May-2023 13:14	08-May-2023 10:43	08-May-2023 09:53
Compound	CAS Number	LOR	Unit	ES2315943-101	ES2315943-102	ES2315943-103	ES2315943-150	ES2315943-151
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	0.07	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.30	1.35	0.01	0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.19	0.23	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	18.4	14.0	0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	0.08	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.28	0.26	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	0.05	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.16	0.21	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.03	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW466_230510	0908_MW468_230510	0908_MW829_230511	0908_QC100_230508	0908_QC101_230508
Sampling date / time				10-May-2023 10:14	10-May-2023 10:02	11-May-2023 13:14	08-May-2023 10:43	08-May-2023 09:53	
Compound	CAS Number	LOR	Unit	ES2315943-101	ES2315943-102	ES2315943-103	ES2315943-150	ES2315943-151	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>20.6</b>	<b>16.4</b>	<b>0.02</b>	<b>0.02</b>	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>19.7</b>	<b>15.4</b>	<b>0.02</b>	<b>0.02</b>	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>20.4</b>	<b>16.0</b>	<b>0.02</b>	<b>0.02</b>	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>110</b>	<b>95.9</b>	<b>99.7</b>	<b>87.5</b>	<b>86.6</b>	
13C8-PFOA	----	0.02	%	<b>97.6</b>	<b>101</b>	<b>104</b>	<b>87.6</b>	<b>90.0</b>	



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC105_230509	0908_QC106_230509	0908_QC107_230509	0908_QC109_230509	0908_QC111_230509
Sampling date / time				09-May-2023 09:35	09-May-2023 15:10	09-May-2023 10:00	09-May-2023 10:28	09-May-2023 11:17
Compound	CAS Number	LOR	Unit	ES2315943-155	ES2315943-156	ES2315943-157	ES2315943-159	ES2315943-161
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<b>0.02</b>	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<b>0.03</b>	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<b>0.42</b>	<0.01	<b>0.09</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<b>0.04</b>	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<b>1.36</b>	<0.01	<b>0.22</b>
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<b>0.02</b>	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<b>0.09</b>	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<b>0.03</b>	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC105_230509	0908_QC106_230509	0908_QC107_230509	0908_QC109_230509	0908_QC111_230509
Sampling date / time				09-May-2023 09:35	09-May-2023 15:10	09-May-2023 10:00	09-May-2023 10:28	09-May-2023 11:17	
Compound	CAS Number	LOR	Unit	ES2315943-155	ES2315943-156	ES2315943-157	ES2315943-159	ES2315943-161	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<b>2.01</b>	<0.01	<b>0.31</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<b>1.78</b>	<0.01	<b>0.31</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<b>1.94</b>	<0.01	<b>0.31</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>90.8</b>	<b>85.7</b>	<b>88.6</b>	<b>83.0</b>	<b>81.1</b>	
13C8-PFOA	----	0.02	%	<b>86.8</b>	<b>89.5</b>	<b>86.7</b>	<b>85.5</b>	<b>86.8</b>	



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0908_QC112_230511	0908_QC114_230512	0908_QC117_230510	0908_QC119_230510	----
			Sampling date / time	11-May-2023 13:52	12-May-2023 08:36	10-May-2023 09:10	10-May-2023 10:22	----
Compound	CAS Number	LOR	Unit	ES2315943-162	ES2315943-164	ES2315943-166	ES2315943-167	-----
				Result	Result	Result	Result	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.98	<0.02	0.14	0.12	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.93	<0.02	0.15	0.12	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	13.3	0.02	3.27	1.13	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	1.07	<0.02	<0.02	0.08	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	7.40	<0.01	0.12	4.13	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.49	<0.02	0.12	0.12	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	2.81	<0.02	0.52	0.35	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.34	<0.02	0.10	0.05	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.54	<0.01	0.07	0.08	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_QC112_230511	0908_QC114_230512	0908_QC117_230510	0908_QC119_230510	----
Sampling date / time				11-May-2023 13:52	12-May-2023 08:36	10-May-2023 09:10	10-May-2023 10:22	----	----
Compound	CAS Number	LOR	Unit	ES2315943-162	ES2315943-164	ES2315943-166	ES2315943-167	-----	-----
				Result	Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	28.1	0.02	4.49	6.18	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	20.7	0.02	3.39	5.26	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	26.1	0.02	4.34	5.98	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	83.0	86.7	86.7	80.3	----	----
13C8-PFOA	----	0.02	%	87.4	85.5	89.6	85.6	----	----





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC300_230508	0908_QC301_230509	0908_QC302_230510	0908_QC303_230511	0908_QC304_230512
Sampling date / time					08-May-2023 17:30	09-May-2023 17:00	10-May-2023 14:30	11-May-2023 15:23	12-May-2023 12:05
Compound	CAS Number	LOR	Unit	ES2315943-168	ES2315943-169	ES2315943-170	ES2315943-171	ES2315943-172	ES2315943-172
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	81.8	104	100	92.8	89.9	89.9
13C8-PFOA	----	0.02	%	86.9	100	103	103	97.4	97.4



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_230508	0908_SD005_230509	0908_SD006_230508	0908_SD007_230508	0908_SD009_230508
Sampling date / time				08-May-2023 15:45	09-May-2023 11:14	08-May-2023 16:09	08-May-2023 15:59	08-May-2023 15:08	
Compound	CAS Number	LOR	Unit	ES2315943-104	ES2315943-105	ES2315943-106	ES2315943-107	ES2315943-108	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	42.1	47.4	62.6	26.8	24.4	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0073	0.0007	0.0075	0.0007	0.0008	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0017	<0.0002	0.0008	0.0002	0.0003	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.142	0.0232	0.200	0.0383	0.0131	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0004	<0.0002	0.0007	0.0003	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0010	<0.0002	0.0004	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_230508	0908_SD005_230509	0908_SD006_230508	0908_SD007_230508	0908_SD009_230508
Sampling date / time					08-May-2023 15:45	09-May-2023 11:14	08-May-2023 16:09	08-May-2023 15:59	08-May-2023 15:08
Compound	CAS Number	LOR	Unit	ES2315943-104	ES2315943-105	ES2315943-106	ES2315943-107	ES2315943-108	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<b>0.0012</b>	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.154</b>	<b>0.0239</b>	<b>0.211</b>	<b>0.0395</b>	<b>0.0146</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.149</b>	<b>0.0239</b>	<b>0.208</b>	<b>0.0390</b>	<b>0.0139</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.152</b>	<b>0.0239</b>	<b>0.209</b>	<b>0.0393</b>	<b>0.0139</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>89.0</b>	<b>82.5</b>	<b>85.0</b>	<b>99.0</b>	<b>93.5</b>	
13C8-PFOA	----	0.0002	%	<b>99.0</b>	<b>104</b>	<b>102</b>	<b>106</b>	<b>99.5</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD011_230511	0908_SD014_230509	0908_SD023_230509	0908_SD024_230509	0908_SD047_230510
Sampling date / time					11-May-2023 10:25	09-May-2023 10:02	09-May-2023 10:53	09-May-2023 11:53	10-May-2023 14:07
Compound	CAS Number	LOR	Unit	ES2315943-109	ES2315943-110	ES2315943-111	ES2315943-112	ES2315943-113	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	20.1	81.4	47.0	68.1	21.6	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0011	0.0010	0.0011	0.0025	0.0008	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0003	<0.0002	<0.0002	0.0008	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0396	0.0291	0.0192	0.0731	0.0057	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0003	<0.0002	0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD011_230511	0908_SD014_230509	0908_SD023_230509	0908_SD024_230509	0908_SD047_230510
Sampling date / time					11-May-2023 10:25	09-May-2023 10:02	09-May-2023 10:53	09-May-2023 11:53	10-May-2023 14:07
Compound	CAS Number	LOR	Unit	ES2315943-109	ES2315943-110	ES2315943-111	ES2315943-112	ES2315943-113	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0410</b>	<b>0.0301</b>	<b>0.0206</b>	<b>0.0764</b>	<b>0.0067</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0407</b>	<b>0.0301</b>	<b>0.0203</b>	<b>0.0756</b>	<b>0.0065</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0407</b>	<b>0.0301</b>	<b>0.0206</b>	<b>0.0756</b>	<b>0.0067</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>97.5</b>	<b>75.5</b>	<b>102</b>	<b>78.5</b>	<b>83.5</b>	
13C8-PFOA	----	0.0002	%	<b>96.0</b>	<b>97.5</b>	<b>100</b>	<b>95.0</b>	<b>95.0</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_230510	0908_SD055_230510	0908_SD060_230511	0908_SD062_230511	0908_SD081_230511
Sampling date / time					10-May-2023 12:08	10-May-2023 10:51	11-May-2023 11:45	11-May-2023 10:09	11-May-2023 09:47
Compound	CAS Number	LOR	Unit	ES2315943-114	ES2315943-115	ES2315943-116	ES2315943-117	ES2315943-119	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	17.5	25.9	22.6	45.5	81.9	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0008	0.0022	0.0006	<0.0002	0.0004	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0026	0.0137	0.0017	0.0003	0.0038	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_230510	0908_SD055_230510	0908_SD060_230511	0908_SD062_230511	0908_SD081_230511
Sampling date / time					10-May-2023 12:08	10-May-2023 10:51	11-May-2023 11:45	11-May-2023 10:09	11-May-2023 09:47
Compound	CAS Number	LOR	Unit	ES2315943-114	ES2315943-115	ES2315943-116	ES2315943-117	ES2315943-119	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0034</b>	<b>0.0167</b>	<b>0.0023</b>	<b>0.0003</b>	<b>0.0042</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0034</b>	<b>0.0159</b>	<b>0.0023</b>	<b>0.0003</b>	<b>0.0042</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0034</b>	<b>0.0159</b>	<b>0.0023</b>	<b>0.0003</b>	<b>0.0042</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>91.0</b>	<b>102</b>	<b>96.5</b>	<b>75.5</b>	<b>88.0</b>	
13C8-PFOA	----	0.0002	%	<b>102</b>	<b>104</b>	<b>97.0</b>	<b>80.0</b>	<b>99.5</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD108_230510	0908_SD110_230510	0908_SD079_230509	0908_QC104_230508	0908_QC113_230509
Sampling date / time					10-May-2023 13:50	10-May-2023 11:20	09-May-2023 11:56	08-May-2023 15:08	09-May-2023 11:14
Compound	CAS Number	LOR	Unit	ES2315943-120	ES2315943-130	ES2315943-146	ES2315943-154	ES2315943-163	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>38.6</b>	<b>65.1</b>	<b>79.9</b>	<b>30.1</b>	<b>50.7</b>	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<b>0.0003</b>	<b>0.0003</b>	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0003</b>	<b>0.0058</b>	<b>0.0034</b>	<b>0.0011</b>	<b>0.0004</b>	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<b>0.0005</b>	<b>0.0005</b>	<b>0.0002</b>	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0077</b>	<b>0.169</b>	<b>0.0363</b>	<b>0.0176</b>	<b>0.0116</b>	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0006</b>	<b>0.0022</b>	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<b>0.0006</b>	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<b>0.0022</b>	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<b>0.0003</b>	<b>0.0520</b>	<0.0002	<b>0.0006</b>	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD108_230510	0908_SD110_230510	0908_SD079_230509	0908_QC104_230508	0908_QC113_230509
Sampling date / time					10-May-2023 13:50	10-May-2023 11:20	09-May-2023 11:56	08-May-2023 15:08	09-May-2023 11:14
Compound	CAS Number	LOR	Unit	ES2315943-120	ES2315943-130	ES2315943-146	ES2315943-154	ES2315943-163	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0089</b>	<b>0.233</b>	<b>0.0405</b>	<b>0.0195</b>	<b>0.0120</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0080</b>	<b>0.175</b>	<b>0.0397</b>	<b>0.0187</b>	<b>0.0120</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0080</b>	<b>0.178</b>	<b>0.0397</b>	<b>0.0187</b>	<b>0.0120</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>109</b>	<b>100</b>	<b>91.5</b>	<b>80.0</b>	<b>93.0</b>	
13C8-PFOA	----	0.0002	%	<b>110</b>	<b>110</b>	<b>98.5</b>	<b>102</b>	<b>99.0</b>	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS110_230511	0908_SS101_230509	0908_SS102_230509	0908_SS103_230509	0908_SS104_230509
Sampling date / time				11-May-2023 10:03	09-May-2023 09:50	09-May-2023 08:53	09-May-2023 14:43	09-May-2023 14:58	
Compound	CAS Number	LOR	Unit	ES2315943-121	ES2315943-122	ES2315943-123	ES2315943-124	ES2315943-125	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	22.9	21.0	34.8	56.7	29.8	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0004	0.0003	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0034	0.0044	<0.0002	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0017	0.0007	0.0043	0.0212	0.0005	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0004	0.0003	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	





## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS110_230511	0908_SS101_230509	0908_SS102_230509	0908_SS103_230509	0908_SS104_230509
Sampling date / time				11-May-2023 10:03	09-May-2023 09:50	09-May-2023 08:53	09-May-2023 14:43	09-May-2023 14:58	
Compound	CAS Number	LOR	Unit	ES2315943-121	ES2315943-122	ES2315943-123	ES2315943-124	ES2315943-125	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0017</b>	<b>0.0007</b>	<b>0.0087</b>	<b>0.0278</b>	<b>0.0005</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0017</b>	<b>0.0007</b>	<b>0.0077</b>	<b>0.0256</b>	<b>0.0005</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0017</b>	<b>0.0007</b>	<b>0.0083</b>	<b>0.0271</b>	<b>0.0005</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>92.0</b>	<b>94.0</b>	<b>84.5</b>	<b>102</b>	<b>93.5</b>	
13C8-PFOA	----	0.0002	%	<b>97.5</b>	<b>97.5</b>	<b>103</b>	<b>102</b>	<b>95.5</b>	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS105_230509	0908_SS106_230509	0908_SS107_230511	0908_SS109_230511	0908_SS111_230511
Sampling date / time				09-May-2023 15:20	09-May-2023 07:57	11-May-2023 10:27	11-May-2023 11:59	11-May-2023 09:20	
Compound	CAS Number	LOR	Unit	ES2315943-126	ES2315943-127	ES2315943-128	ES2315943-129	ES2315943-131	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	23.9	35.3	10.6	13.6	29.4	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0011	0.0020	0.0026	0.0045	0.0005	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS105_230509	0908_SS106_230509	0908_SS107_230511	0908_SS109_230511	0908_SS111_230511
Sampling date / time				09-May-2023 15:20	09-May-2023 07:57	11-May-2023 10:27	11-May-2023 11:59	11-May-2023 09:20	
Compound	CAS Number	LOR	Unit	ES2315943-126	ES2315943-127	ES2315943-128	ES2315943-129	ES2315943-131	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0011</b>	<b>0.0020</b>	<b>0.0026</b>	<b>0.0050</b>	<b>0.0005</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0011</b>	<b>0.0020</b>	<b>0.0026</b>	<b>0.0045</b>	<b>0.0005</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0011</b>	<b>0.0020</b>	<b>0.0026</b>	<b>0.0045</b>	<b>0.0005</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>104</b>	<b>80.5</b>	<b>91.0</b>	<b>94.0</b>	<b>86.0</b>	
13C8-PFOA	----	0.0002	%	<b>102</b>	<b>97.0</b>	<b>95.5</b>	<b>102</b>	<b>100</b>	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS112_230511	0908_QC103_230509	0908_QC110_230511	----	----
Sampling date / time				11-May-2023 09:53	09-May-2023 08:53	11-May-2023 10:27	----	----	
Compound	CAS Number	LOR	Unit	ES2315943-132	ES2315943-153	ES2315943-160	-----	-----	
				Result	Result	Result	----	----	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>15.2</b>	<b>32.9</b>	<b>10.7</b>	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<b>0.0003</b>	<0.0002	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<b>0.0023</b>	<0.0002	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0017</b>	<b>0.0049</b>	<b>0.0032</b>	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<b>0.0004</b>	<0.0002	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS112_230511	0908_QC103_230509	0908_QC110_230511	----	----
Sampling date / time				11-May-2023 09:53	09-May-2023 08:53	11-May-2023 10:27	----	----	
Compound	CAS Number	LOR	Unit	ES2315943-132	ES2315943-153	ES2315943-160	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0017</b>	<b>0.0079</b>	<b>0.0032</b>	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0017</b>	<b>0.0072</b>	<b>0.0032</b>	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0017</b>	<b>0.0076</b>	<b>0.0032</b>	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>90.5</b>	<b>89.5</b>	<b>88.5</b>	----	----	
13C8-PFOA	----	0.0002	%	<b>98.5</b>	<b>97.5</b>	<b>94.5</b>	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW079_230509	0908_SW001_230508	0908_SW005_230509	0908_SW006_230508	0908_SW007_230508
Sampling date / time					09-May-2023 11:56	08-May-2023 15:43	09-May-2023 11:17	08-May-2023 16:13	08-May-2023 15:57
Compound	CAS Number	LOR	Unit	ES2315943-118	ES2315943-133	ES2315943-134	ES2315943-135	ES2315943-136	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	<0.02	<0.02	0.04	0.03	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.03	<0.02	0.04	0.04	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.27	0.41	0.09	0.64	0.66	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.04	<0.02	0.07	0.07	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.21	2.16	0.37	6.13	7.27	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.03	<0.02	0.07	0.07	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.09	<0.02	0.25	0.27	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.03	0.04	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.04	<0.01	0.07	0.07	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW079_230509	0908_SW001_230508	0908_SW005_230509	0908_SW006_230508	0908_SW007_230508
Sampling date / time				09-May-2023 11:56	08-May-2023 15:43	09-May-2023 11:17	08-May-2023 16:13	08-May-2023 15:57	
Compound	CAS Number	LOR	Unit	ES2315943-118	ES2315943-133	ES2315943-134	ES2315943-135	ES2315943-136	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.61</b>	<b>2.80</b>	<b>0.46</b>	<b>7.34</b>	<b>8.52</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.48</b>	<b>2.57</b>	<b>0.46</b>	<b>6.77</b>	<b>7.93</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.57</b>	<b>2.73</b>	<b>0.46</b>	<b>7.23</b>	<b>8.41</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>92.2</b>	<b>99.6</b>	<b>94.4</b>	<b>97.2</b>	<b>102</b>	
13C8-PFOA	----	0.02	%	<b>103</b>	<b>99.7</b>	<b>102</b>	<b>102</b>	<b>105</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW009_230508	0908_SW011_230511	0908_SW014_230509	0908_SW023_230509	0908_SW047_230510
Sampling date / time				08-May-2023 15:12	11-May-2023 10:30	09-May-2023 10:00	09-May-2023 10:51	10-May-2023 14:02	
Compound	CAS Number	LOR	Unit	ES2315943-137	ES2315943-138	ES2315943-139	ES2315943-140	ES2315943-141	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.03	0.03	0.02	0.05	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.04	0.03	<0.02	0.08	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.83	0.58	0.39	0.10	0.94	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.08	0.05	0.04	<0.02	0.08	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.36	2.96	1.47	0.06	8.42	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	0.03	0.02	<0.02	0.08	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.25	0.12	0.10	<0.02	0.22	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	<0.02	<0.02	<0.02	0.05	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.05	0.03	<0.01	0.10	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW009_230508	0908_SW011_230511	0908_SW014_230509	0908_SW023_230509	0908_SW047_230510
Sampling date / time				08-May-2023 15:12	11-May-2023 10:30	09-May-2023 10:00	09-May-2023 10:51	10-May-2023 14:02	
Compound	CAS Number	LOR	Unit	ES2315943-137	ES2315943-138	ES2315943-139	ES2315943-140	ES2315943-141	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<b>0.07</b>	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>5.84</b>	<b>3.86</b>	<b>2.11</b>	<b>0.18</b>	<b>10.1</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>5.19</b>	<b>3.54</b>	<b>1.86</b>	<b>0.16</b>	<b>9.36</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>5.67</b>	<b>3.77</b>	<b>2.04</b>	<b>0.18</b>	<b>9.93</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>90.7</b>	<b>96.4</b>	<b>95.3</b>	<b>96.7</b>	<b>95.8</b>	
13C8-PFOA	----	0.02	%	<b>103</b>	<b>102</b>	<b>98.6</b>	<b>99.3</b>	<b>102</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)			Sample ID	0908_SW048_230510	0908_SW055_230510	0908_SW060_230511	0908_SW062_230511	0908_SW081_230511
Sampling date / time			10-May-2023 12:08	10-May-2023 10:45	11-May-2023 11:47	11-May-2023 10:06	11-May-2023 09:43	
Compound	CAS Number	LOR	Unit	ES2315943-142	ES2315943-143	ES2315943-144	ES2315943-145	ES2315943-147
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	0.07	1.66	0.03	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.10	0.10	2.32	0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.94	0.88	13.4	0.21	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	0.04	0.80	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.52	0.90	15.0	0.12	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.4	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.57	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	0.16	3.35	0.03	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.02	0.44	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.07	0.05	0.79	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW048_230510	0908_SW055_230510	0908_SW060_230511	0908_SW062_230511	0908_SW081_230511
Sampling date / time				10-May-2023 12:08	10-May-2023 10:45	11-May-2023 11:47	11-May-2023 10:06	11-May-2023 09:43	
Compound	CAS Number	LOR	Unit	ES2315943-142	ES2315943-143	ES2315943-144	ES2315943-145	ES2315943-147	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	2.01	2.26	38.7	0.41	<0.01	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.46	1.78	28.4	0.33	<0.01	
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.86	2.12	35.6	0.39	<0.01	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	109	99.8	98.9	83.2	80.9	
13C8-PFOA	----	0.02	%	101	97.0	104	91.1	88.4	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW108_230510	0908_SW110_230510	0908_QC102_230508	0908_QC108_230510	0908_QC115_230509
Sampling date / time				10-May-2023 13:46	10-May-2023 11:20	08-May-2023 15:17	10-May-2023 14:02	09-May-2023 13:41	
Compound	CAS Number	LOR	Unit	ES2315943-148	ES2315943-149	ES2315943-152	ES2315943-158	ES2315943-165	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.05	0.06	0.07	<0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	0.08	0.08	0.10	<0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.10	1.13	0.93	1.19	<0.01	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.12	0.11	0.08	0.13	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	10.6	8.55	4.38	10.8	<0.01	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.11	0.10	0.06	0.11	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.28	0.28	0.22	0.27	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	0.06	0.04	0.06	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.11	0.11	0.07	0.12	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW108_230510	0908_SW110_230510	0908_QC102_230508	0908_QC108_230510	0908_QC115_230509
Sampling date / time				10-May-2023 13:46	10-May-2023 11:20	08-May-2023 15:17	10-May-2023 14:02	09-May-2023 13:41
Compound	CAS Number	LOR	Unit	ES2315943-148	ES2315943-149	ES2315943-152	ES2315943-158	ES2315943-165
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.05	0.05	<0.05	0.08	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	12.6	10.5	5.92	12.9	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	11.7	9.68	5.31	12.0	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	12.4	10.3	5.76	12.7	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	93.4	84.8	87.4	91.5	84.3
13C8-PFOA	----	0.02	%	85.7	88.4	85.5	87.3	84.2



## Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2315943**

Page : 1 of 46

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 12-May-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 15-May-2023

C-O-C number : 51922

Issue Date : 31-May-2023

Sampler : [REDACTED]

Site : 0908

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 172

No. of samples analysed : 172



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5055972)</b>									
ES2315943-106	0908_SD006_230508	EA055: Moisture Content	----	0.1	%	62.6	60.5	3.4	0% - 20%
ES2315943-117	0908_SD062_230511	EA055: Moisture Content	----	0.1	%	45.5	47.2	3.7	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5055973)</b>									
ES2315943-127	0908_SS106_230509	EA055: Moisture Content	----	0.1	%	35.3	35.2	0.0	0% - 20%
ES2315992-002	Anonymous	EA055: Moisture Content	----	0.1	%	15.2	16.4	7.7	0% - 50%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5050840)</b>									
ES2315692-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2315943-104	0908_SD001_230508	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0073	0.0070	4.0	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0017	0.0018	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.142	0.138	3.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5050842)</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0008	0.0010	18.1	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5050842) - continued</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0026	0.0028	5.4	0% - 50%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2315943-125	0908_SS104_230509	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5050895)</b>									
ES2315865-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.0003	46.5	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0016	0.0016	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5050840)</b>									
ES2315692-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2315943-104	0908_SD001_230508	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0010	0.0011	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5050842)</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5050842) - continued</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2315943-125	0908_SS104_230509	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5050895)</b>									
ES2315865-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5050840)</b>									
ES2315692-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5050840) - continued</b>									
ES2315692-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2315943-104	0908_SD001_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5050842)</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2315943-125	0908_SS104_230509	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5050842) - continued</b>									
ES2315943-125	0908_SS104_230509	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5050895)</b>									
ES2315865-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5050840)</b>									
ES2315692-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2315943-104	0908_SD001_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0012	0.0015	20.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5050842)</b>									



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5050842) - continued</b>									
ES2315943-114	0908_SD048_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2315943-125	0908_SS104_230509	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5050895)</b>									
ES2315865-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.52	1.62	6.5	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.21	1.30	7.4	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.14	0.14	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.12	0.13	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.10	0.13	22.3	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2315943-011	0908_MW125D_230509	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5047833)</b>									
ES2315943-020	0908_MW132S_230511	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.22	0.21	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2315943-030	0908_MW158S_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5049622)</b>									
ES2315943-039	0908_MW166_230510	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.27	0.31	11.4	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	18.6	19.4	4.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2315943-049	0908_MW179S_230510	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.52	1.50	1.6	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.24	0.22	6.9	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.08	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5049623)</b>									
ES2315943-059	0908_MW208_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.87	2.68	7.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	11.0	11.1	0.6	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.15	0.14	7.7	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.61	0.57	7.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2315943-069	0908_MW244S_230510	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5049627)</b>									
ES2315943-079	0908_MW257D_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5049627) - continued</b>									
ES2315943-079	0908_MW257D_230508	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2315943-089	0908_MW278D_230511	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5052358)</b>									
ES2315943-099	0908_MW406_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
ES2315943-137	0908_SW009_230508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.83	0.82	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.36	4.34	0.5	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.05	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.07	28.4	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.08	0.06	15.7	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5053344)</b>									
ES2315943-145	0908_SW062_230511	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.21	0.19	8.1	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.12	0.11	11.3	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
ES2315943-158	0908_QC108_230510	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.19	1.22	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	10.8	11.1	3.3	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.07	0.08	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.10	0.10	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.13	0.12	0.0	No Limit
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5053566)</b>									
ES2315943-169	0908_QC301_230509	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5053566) - continued</b>									
ES2315943-169	0908_QC301_230509	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.07	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.27	0.26	4.1	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
ES2315943-011	0908_MW125D_230509	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5047833)</b>									
ES2315943-020	0908_MW132S_230511	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
ES2315943-030	0908_MW158S_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5047833) - continued</b>									
ES2315943-030	0908_MW158S_230508	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5049622)</b>									
ES2315943-039	0908_MW166_230510	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.06	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		ES2315943-049	0908_MW179S_230510	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.37	0.35
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	0.14	0.14	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	0.33	0.32	0.0	0% - 50%
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	0.07	0.07	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.1	0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5049623)</b>									
ES2315943-059	0908_MW208_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.26	0.26	0.0	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.58	0.57	3.2	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.13	0.12	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5049623) - continued</b>									
ES2315943-059	0908_MW208_230508	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2315943-069	0908_MW244S_230510	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5049627)</b>									
ES2315943-079	0908_MW257D_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
ES2315943-089	0908_MW278D_230511	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5052358)</b>									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5052358) - continued</b>									
ES2315943-099	0908_MW406_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
ES2315943-137	0908_SW009_230508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.08	0.07	14.8	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	0.05	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.25	0.22	15.7	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5053344)</b>									
ES2315943-145	0908_SW062_230511	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
ES2315943-158	0908_QC108_230510	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.12	0.12	0.0	0% - 50%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.11	0.11	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.27	0.28	0.0	0% - 50%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5053344) - continued</b>									
ES2315943-158	0908_QC108_230510	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5053566)</b>									
ES2315943-169	0908_QC301_230509	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-011	0908_MW125D_230509	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5047828) - continued</b>									
ES2315943-011	0908_MW125D_230509	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5047833)</b>									
ES2315943-020	0908_MW132S_230511	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-030	0908_MW158S_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5049622)</b>									
ES2315943-039	0908_MW166_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5049622) - continued</b>									
ES2315943-039	0908_MW166_230510	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-049	0908_MW179S_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5049623)</b>									
ES2315943-059	0908_MW208_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-069	0908_MW244S_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5049623) - continued</b>									
ES2315943-069	0908_MW244S_230510	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5049627)</b>									
ES2315943-079	0908_MW257D_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-089	0908_MW278D_230511	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5052358)</b>									
ES2315943-099	0908_MW406_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5052358) - continued</b>									
ES2315943-099	0908_MW406_230508	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-137	0908_SW009_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5053344)</b>									
ES2315943-145	0908_SW062_230511	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-158	0908_QC108_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5053344) - continued</b>									
ES2315943-158	0908_QC108_230510	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5053566)</b>									
ES2315943-169	0908_QC301_230509	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-011	0908_MW125D_230509	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5047833)</b>									
ES2315943-020	0908_MW132S_230511	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5047833) - continued</b>									
ES2315943-020	0908_MW132S_230511	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-030	0908_MW158S_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5049622)</b>									
ES2315943-039	0908_MW166_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-049	0908_MW179S_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5049623)</b>									
ES2315943-059	0908_MW208_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-069	0908_MW244S_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5049623) - continued</b>									
ES2315943-069	0908_MW244S_230510	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5049627)</b>									
ES2315943-079	0908_MW257D_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-089	0908_MW278D_230511	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5052358)</b>									
ES2315943-099	0908_MW406_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-137	0908_SW009_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5053344)</b>									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5053344) - continued</b>									
ES2315943-145	0908_SW062_230511	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2315943-158	0908_QC108_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.08	0.08	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5053566)</b>									
ES2315943-169	0908_QC301_230509	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: Sum of PFAS	----	0.01	µg/L	3.54	3.75	5.8	0% - 20%
ES2315943-011	0908_MW125D_230509	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5047833)</b>									
ES2315943-020	0908_MW132S_230511	EP231X: Sum of PFAS	----	0.01	µg/L	0.27	0.26	3.8	0% - 20%
ES2315943-030	0908_MW158S_230508	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5049622)</b>									
ES2315943-039	0908_MW166_230510	EP231X: Sum of PFAS	----	0.01	µg/L	19.0	19.9	4.4	0% - 20%
ES2315943-049	0908_MW179S_230510	EP231X: Sum of PFAS	----	0.01	µg/L	2.93	2.84	3.1	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 5049623)</b>									
ES2315943-059	0908_MW208_230508	EP231X: Sum of PFAS	----	0.01	µg/L	15.9	15.7	1.0	0% - 20%
ES2315943-069	0908_MW244S_230510	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5049627)</b>									
ES2315943-079	0908_MW257D_230508	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2315943-089	0908_MW278D_230511	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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 Work Order : ES2315943 Amendment 1  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP\_23



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231P: PFAS Sums (QC Lot: 5052358)</b>									
ES2315943-099	0908_MW406_230508	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.03	0.0	No Limit
ES2315943-137	0908_SW009_230508	EP231X: Sum of PFAS	----	0.01	µg/L	5.84	5.71	2.3	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 5053344)</b>									
ES2315943-145	0908_SW062_230511	EP231X: Sum of PFAS	----	0.01	µg/L	0.41	0.38	7.6	0% - 20%
ES2315943-158	0908_QC108_230510	EP231X: Sum of PFAS	----	0.01	µg/L	12.9	13.3	2.7	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 5053566)</b>									
ES2315943-169	0908_QC301_230509	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050840)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050842)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050895)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	124	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050840)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	91.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	135



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050840) - continued</b>									
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.4	69.0	133	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050842)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	95.0	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	84.8	69.0	133	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050895)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	95.5	71.0	135	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	132	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70.0	132	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	71.0	131	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	129	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	133	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	64.0	136	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	135	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	66.0	139	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	69.0	133	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050840)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	71.6	129	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.3	69.8	131	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.7	68.7	130	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.2	65.1	134	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050840) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050842)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.3	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.7	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050895)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.8	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.0	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.8	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050840)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	112	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	121	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	106	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	90.0	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050842)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	104	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	122	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	65.0	137





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050842) - continued</b>								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	95.2	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050895)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	112	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	125	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	121	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.8	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5047828)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	89.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	100	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5047833)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	92.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	94.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	96.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049622)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	88.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	92.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049623)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	92.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	95.0	68.0	131



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049623) - continued</b>								
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	112	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	93.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	98.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049627)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	96.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5052358)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	93.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	99.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5053344)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	73.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	87.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5053566)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	95.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5047828)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5047828) - continued</b>								
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	89.0	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5047833)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	116	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	100	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049622)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.5	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	78.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	74.6	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049623)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049623) - continued</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	105	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	95.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	78.6	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049627)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	93.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	94.7	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5052358)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	144



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5052358) - continued</b>								
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.4	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5053344)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	84.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	81.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	75.2	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5053566)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	78.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	99.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	85.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	113	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	75.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5047828)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	98.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	86.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.0	65.0	136



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5047828) - continued</b>									
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.4	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5047833)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	81.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	98.6	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.9	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.0	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049622)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.7	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	85.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	77.9	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	85.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.9	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	79.2	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	79.1	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049623)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	105	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.4	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.8	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135	





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049627)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	103	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	102	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5052358)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	76.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	100	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.4	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053344)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	86.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	76.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	94.5	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.5	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053566)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	109	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	80.8	68.0	141



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053566) - continued</b>								
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.1	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	113	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5047828)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	85.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	111	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	109	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	96.0	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5047833)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	102	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.2	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049622)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	105	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.6	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049623)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	112	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	113	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	111	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	91.4	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049627)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	113	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	111	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.2	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5052358)</b>								





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Acceptable Limits (%)	
					Concentration	LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5052358) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	101	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	117	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.8	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5053344)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	93.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.5	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5053566)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	113	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	114	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050840)</b>							
ES2315692-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	102	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	92.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	99.6	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	117	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	106	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	116	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050842)</b>							
ES2315943-114	0908_SD048_230510	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	104	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	104	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	107	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	112	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	93.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	90.4	59.0	134



Sub-Matrix: SOIL

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5050895)</b>									
ES2315865-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	103	72.0	128		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	108	73.0	123		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	109	67.0	130		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	119	70.0	132		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	116	68.0	136		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	109	59.0	134		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050840)</b>									
ES2315692-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	87.0	71.0	135		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	112	69.0	132		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	107	70.0	132		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	108	71.0	131		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	120	69.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	118	72.0	129		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	103	69.0	133		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	112	64.0	136		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	123	69.0	135		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	120	66.0	139		
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	97.3	69.0	133				
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050842)</b>									
ES2315943-114	0908_SD048_230510	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	94.5	71.0	135		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	118	69.0	132		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	110	70.0	132		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	118	71.0	131		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	118	69.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	117	72.0	129		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	111	69.0	133		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	104	64.0	136		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	109	66.0	139		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	82.8	69.0	133		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050895)</b>							
		ES2315865-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	103	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.00125 mg/kg	118	69.0	132		
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.00125 mg/kg	110	70.0	132		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.00125 mg/kg	120	71.0	131		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.00125 mg/kg	116	69.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.00125 mg/kg	122	72.0	129		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.00125 mg/kg	107	69.0	133		



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5050895) - continued</b>							
ES2315865-001	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	104	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	92.3	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050840)</b>							
ES2315692-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	104	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	111	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	88.9	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	96.6	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	96.6	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	96.4	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050842)</b>							
ES2315943-114	0908_SD048_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	104	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	94.4	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	103	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	90.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	102	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050895)</b>							
ES2315865-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	103	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	96.5	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	98.6	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	102	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	92.9	65.1	134



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5050895) - continued</b>							
ES2315865-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	116	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	111	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050840)</b>							
ES2315692-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	105	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	118	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	114	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	80.8	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050842)</b>							
ES2315943-114	0908_SD048_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	103	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	132	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	109	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	97.2	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5050895)</b>							
ES2315865-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	111	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	124	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	123	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	94.4	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5047828)</b>							
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	103	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	114	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5047833)</b>							
ES2315943-021	0908_MW134D_230512	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.6	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	98.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	95.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.6	65.0	140



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5047833) - continued</b>							
ES2315943-021	0908_MW134D_230512	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	90.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049622)</b>							
ES2315943-040	0908_MW167_230510	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	90.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	88.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	98.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049623)</b>							
ES2315943-060	0908_MW210D_230508	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	95.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	94.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	95.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	104	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	88.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	90.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5049627)</b>							
ES2315943-080	0908_MW257S_230508	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	93.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	93.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5052358)</b>							
ES2315943-100	0908_MW433_230509	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	80.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	92.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	85.8	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5053344)</b>							
ES2315943-147	0908_SW081_230511	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	117	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	89.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	96.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	93.2	53.0	142



Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5053566)</b>									
ES2315943-170	0908_QC302_230510	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.2	72.0	130		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.5	71.0	127		
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.9	68.0	131		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	101	69.0	134		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.3	65.0	140		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	89.8	53.0	142		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5047828)</b>									
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	74.8	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.0	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	91.4	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.6	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	72.6	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.2	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.8	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.6	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	98.8	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	101	65.0	144		
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.9	71.0	132				
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5047833)</b>									
ES2315943-021	0908_MW134D_230512	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.2	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	100	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	93.8	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	98.0	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.2	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	99.4	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	89.2	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	92.2	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	97.6	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	100	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	89.4	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049622)</b>							
		ES2315943-040	0908_MW167_230510	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	79.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.25 µg/L	107	72.0	129		
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.25 µg/L	91.3	72.0	129		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.25 µg/L	97.7	72.0	130		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.25 µg/L	98.8	71.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.25 µg/L	97.9	69.0	130		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.25 µg/L	96.1	71.0	129		





Sub-Matrix: WATER

				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable Limits (%)			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049622) - continued</b>									
ES2315943-040	0908_MW167_230510	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	86.1	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	80.4	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	88.2	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	79.0	71.0	132		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049623)</b>									
ES2315943-060	0908_MW210D_230508	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.6	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	106	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.4	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	106	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	102	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	100	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	94.8	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.2	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	96.4	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	83.3	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5049627)</b>							
ES2315943-080	0908_MW257S_230508	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	93.8	73.0	129		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.0	72.0	129		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	106	72.0	130		
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.2	71.0	133		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	104	69.0	130		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.4	71.0	129		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	95.4	69.0	133		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.4	72.0	134		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.2	65.0	144		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	83.4	71.0	132		
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5052358)</b>							
		ES2315943-100	0908_MW433_230509	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	75.2	73.0	129
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	97.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.25 µg/L	94.0	72.0	129		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.25 µg/L	96.6	72.0	130		
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1			0.25 µg/L	94.6	71.0	133		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.25 µg/L	102	69.0	130		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.25 µg/L	88.4	71.0	129		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.25 µg/L	91.0	69.0	133		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.25 µg/L	97.8	72.0	134		



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5052358) - continued</b>							
ES2315943-100	0908_MW433_230509	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	98.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	90.6	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5053344)</b>							
ES2315943-147	0908_SW081_230511	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	123	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	94.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	105	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	90.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	86.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	95.9	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	120	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	99.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	80.7	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5053566)</b>							
ES2315943-170	0908_QC302_230510	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	77.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	99.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	94.2	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	103	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	100	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	106	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	77.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5047828)</b>							
ES2315943-001	0908_MW106D_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	86.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	107	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	77.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	87.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	80.8	61.0	135





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5047833)</b>							
ES2315943-021	0908_MW134D_230512	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	90.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	85.4	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	89.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.7	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	88.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.6	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049622)</b>							
ES2315943-040	0908_MW167_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	73.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	90.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	105	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	75.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.1	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049623)</b>							
ES2315943-060	0908_MW210D_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	100	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	81.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.9	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	94.0	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049627)</b>							



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5049627) - continued</b>							
ES2315943-080	0908_MW257S_230508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	80.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	92.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	96.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.4	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5052358)</b>							
ES2315943-100	0908_MW433_230509	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	96.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	81.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	80.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.0	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	85.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.6	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053344)</b>							
ES2315943-147	0908_SW081_230511	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	120	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	78.7	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.9	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	100.0	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053566)</b>							



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5053566) - continued</b>							
ES2315943-170	0908_QC302_230510	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	77.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	84.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	93.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	88.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	99.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5047828)</b>							
ES2315943-001	0908_MW106D_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	81.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	111	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	96.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	91.2	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5047833)</b>							
ES2315943-021	0908_MW134D_230512	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	102	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	115	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	94.0	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049622)</b>							
ES2315943-040	0908_MW167_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.9	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049623)</b>							
ES2315943-060	0908_MW210D_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	101	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	105	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.0	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5049627)</b>							
ES2315943-080	0908_MW257S_230508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	98.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID		Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5052358)</b>							
ES2315943-100	0908_MW433_230509	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.0	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	106	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	118	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	91.2	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5053344)</b>							
ES2315943-147	0908_SW081_230511	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	104	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	102	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	114	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.9	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5053566)</b>							
ES2315943-170	0908_QC302_230510	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	87.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	102	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	104	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2315943	Page	: 1 of 24
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 12-May-2023
Site	: 0908	Issue Date	: 31-May-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 172
Order number	: 60612562_2.1	No. of samples analysed	: 172

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.





Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C) - Continued</b>								
0908_SD011_230511, 0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511,	0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511, 0908_QC110_230511	11-May-2023	----	----	----	18-May-2023	25-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD001_230508, 0908_SD007_230508,	0908_SD006_230508, 0908_SD009_230508	08-May-2023	16-May-2023	04-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_QC104_230508		08-May-2023	17-May-2023	04-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD005_230509, 0908_SD023_230509,	0908_SD014_230509, 0908_SD024_230509	09-May-2023	16-May-2023	05-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_QC113_230509		09-May-2023	17-May-2023	05-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SS101_230509, 0908_SS103_230509, 0908_SS105_230509, 0908_SD079_230509,	0908_SS102_230509, 0908_SS104_230509, 0908_SS106_230509, 0908_QC103_230509	09-May-2023	17-May-2023	05-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD047_230510		10-May-2023	16-May-2023	06-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD048_230510, 0908_SD108_230510,	0908_SD055_230510, 0908_SD110_230510	10-May-2023	17-May-2023	06-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD011_230511		11-May-2023	16-May-2023	07-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_QC110_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
<b>HDPE Soil Jar (EP231X)</b>								
0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511,	0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511	11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	26-Jun-2023	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD001_230508, 0908_SD007_230508,	0908_SD006_230508, 0908_SD009_230508	08-May-2023	16-May-2023	04-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC104_230508		08-May-2023	17-May-2023	04-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD005_230509, 0908_SD023_230509,	0908_SD014_230509, 0908_SD024_230509	09-May-2023	16-May-2023	05-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC113_230509		09-May-2023	17-May-2023	05-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SS101_230509, 0908_SS103_230509, 0908_SS105_230509, 0908_SD079_230509,	0908_SS102_230509, 0908_SS104_230509, 0908_SS106_230509, 0908_QC103_230509	09-May-2023	17-May-2023	05-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD047_230510		10-May-2023	16-May-2023	06-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD048_230510, 0908_SD108_230510,	0908_SD055_230510, 0908_SD110_230510	10-May-2023	17-May-2023	06-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD011_230511		11-May-2023	16-May-2023	07-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC110_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511,	0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511	11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	26-Jun-2023	✓





Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD001_230508, 0908_SD007_230508,	0908_SD006_230508, 0908_SD009_230508	08-May-2023	16-May-2023	04-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC104_230508		08-May-2023	17-May-2023	04-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD005_230509, 0908_SD023_230509,	0908_SD014_230509, 0908_SD024_230509	09-May-2023	16-May-2023	05-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC113_230509		09-May-2023	17-May-2023	05-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SS101_230509, 0908_SS103_230509, 0908_SS105_230509, 0908_SD079_230509,	0908_SS102_230509, 0908_SS104_230509, 0908_SS106_230509, 0908_QC103_230509	09-May-2023	17-May-2023	05-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD047_230510		10-May-2023	16-May-2023	06-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD048_230510, 0908_SD108_230510,	0908_SD055_230510, 0908_SD110_230510	10-May-2023	17-May-2023	06-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD011_230511		11-May-2023	16-May-2023	07-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC110_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511,	0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511	11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	26-Jun-2023	✓



Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD001_230508, 0908_SD007_230508,	0908_SD006_230508, 0908_SD009_230508	08-May-2023	16-May-2023	04-Nov-2023	✔	18-May-2023	25-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_QC104_230508		08-May-2023	17-May-2023	04-Nov-2023	✔	18-May-2023	26-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SD005_230509, 0908_SD023_230509,	0908_SD014_230509, 0908_SD024_230509	09-May-2023	16-May-2023	05-Nov-2023	✔	18-May-2023	25-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_QC113_230509		09-May-2023	17-May-2023	05-Nov-2023	✔	18-May-2023	26-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SS101_230509, 0908_SS103_230509, 0908_SS105_230509, 0908_SD079_230509,	0908_SS102_230509, 0908_SS104_230509, 0908_SS106_230509, 0908_QC103_230509	09-May-2023	17-May-2023	05-Nov-2023	✔	19-May-2023	26-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SD047_230510		10-May-2023	16-May-2023	06-Nov-2023	✔	18-May-2023	25-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SD048_230510, 0908_SD108_230510,	0908_SD055_230510, 0908_SD110_230510	10-May-2023	17-May-2023	06-Nov-2023	✔	19-May-2023	26-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SD011_230511		11-May-2023	16-May-2023	07-Nov-2023	✔	18-May-2023	25-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_QC110_230511		11-May-2023	17-May-2023	07-Nov-2023	✔	18-May-2023	26-Jun-2023	✔
HDPE Soil Jar (EP231X) 0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511,	0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511	11-May-2023	17-May-2023	07-Nov-2023	✔	19-May-2023	26-Jun-2023	✔



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD001_230508, 0908_SD007_230508,	0908_SD006_230508, 0908_SD009_230508	08-May-2023	16-May-2023	04-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC104_230508		08-May-2023	17-May-2023	04-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD005_230509, 0908_SD023_230509,	0908_SD014_230509, 0908_SD024_230509	09-May-2023	16-May-2023	05-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC113_230509		09-May-2023	17-May-2023	05-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SS101_230509, 0908_SS103_230509, 0908_SS105_230509, 0908_SD079_230509,	0908_SS102_230509, 0908_SS104_230509, 0908_SS106_230509, 0908_QC103_230509	09-May-2023	17-May-2023	05-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD047_230510		10-May-2023	16-May-2023	06-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD048_230510, 0908_SD108_230510,	0908_SD055_230510, 0908_SD110_230510	10-May-2023	17-May-2023	06-Nov-2023	✓	19-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD011_230511		11-May-2023	16-May-2023	07-Nov-2023	✓	18-May-2023	25-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_QC110_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	26-Jun-2023	✓
HDPE Soil Jar (EP231X) 0908_SD060_230511, 0908_SD081_230511, 0908_SS107_230511, 0908_SS111_230511,	0908_SD062_230511, 0908_SS110_230511, 0908_SS109_230511, 0908_SS112_230511	11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	26-Jun-2023	✓

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation







Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>								
0908_SW062_230511, 0908_QC112_230511	0908_SW081_230511,	11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC303_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_230512, 0908_MW134D_230512,	0908_MW107S_230512, 0908_MW134I_230512	12-May-2023	15-May-2023	08-Nov-2023	✓	17-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241D_230512, 0908_MW264D_230512, 0908_MW317D_230512,	0908_MW241S_230512, 0908_MW264S_230512, 0908_MW317S_230512	12-May-2023	16-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC304_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	19-May-2023	08-Nov-2023	✓









Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids - Continued</b>								
0908_SW062_230511, 0908_QC112_230511	0908_SW081_230511,	11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC303_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_230512, 0908_MW134D_230512,	0908_MW107S_230512, 0908_MW134I_230512	12-May-2023	15-May-2023	08-Nov-2023	✓	17-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241D_230512, 0908_MW264D_230512, 0908_MW317D_230512,	0908_MW241S_230512, 0908_MW264S_230512, 0908_MW317S_230512	12-May-2023	16-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC304_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	19-May-2023	08-Nov-2023	✓







Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
0908_SW062_230511, 0908_QC112_230511	0908_SW081_230511,	11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC303_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_230512, 0908_MW134D_230512,	0908_MW107S_230512, 0908_MW134I_230512	12-May-2023	15-May-2023	08-Nov-2023	✓	17-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241D_230512, 0908_MW264D_230512, 0908_MW317D_230512,	0908_MW241S_230512, 0908_MW264S_230512, 0908_MW317S_230512	12-May-2023	16-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC304_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	19-May-2023	08-Nov-2023	✓







Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued</b>								
0908_SW062_230511, 0908_QC112_230511	0908_SW081_230511,	11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC303_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_230512, 0908_MW134D_230512,	0908_MW107S_230512, 0908_MW134I_230512	12-May-2023	15-May-2023	08-Nov-2023	✓	17-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241D_230512, 0908_MW264D_230512, 0908_MW317D_230512,	0908_MW241S_230512, 0908_MW264S_230512, 0908_MW317S_230512	12-May-2023	16-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC304_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	19-May-2023	08-Nov-2023	✓









Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums - Continued</b>								
0908_SW062_230511, 0908_QC112_230511	0908_SW081_230511,	11-May-2023	17-May-2023	07-Nov-2023	✓	18-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC303_230511		11-May-2023	17-May-2023	07-Nov-2023	✓	19-May-2023	07-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW107D_230512, 0908_MW134D_230512,	0908_MW107S_230512, 0908_MW134I_230512	12-May-2023	15-May-2023	08-Nov-2023	✓	17-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW241D_230512, 0908_MW264D_230512, 0908_MW317D_230512,	0908_MW241S_230512, 0908_MW264S_230512, 0908_MW317S_230512	12-May-2023	16-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	18-May-2023	08-Nov-2023	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC304_230512		12-May-2023	17-May-2023	08-Nov-2023	✓	19-May-2023	08-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	4	34	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	45	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	45	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	45	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	45	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	15	143	10.49	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	143	5.59	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	143	5.59	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	8	143	5.59	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2315943**  
Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : **17 WARABROOK BLVD**  
**NEWCASTLE Newcastle 2304**

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**

C-O-C number : **51922**  
Site : **0908**  
Sampler : [REDACTED]

Laboratory : **Environmental Division Sydney**  
Contact : [REDACTED]  
Address : **277-289 Woodpark Road Smithfield**  
**NSW Australia 2164**

E-mail : [REDACTED]  
Telephone : **+61 2 8784 8555**  
Facsimile : **+61-2-8784 8500**

Page : **1 of 7**  
Quote number : **ES2021AECOMAU0024 (SY/139/19 v4**  
**60612562\_2.1)**

QC Level : **NEPM 2013 B3 & ALS QC Standard**

### Dates

Date Samples Received : **12-May-2023 14:00**  
Client Requested Due Date : **19-May-2023**  
Issue Date : **31-May-2023**  
Scheduled Reporting Date : **19-May-2023**

### Delivery Details

Mode of Delivery : **Undefined**  
No. of coolers/boxes : **7**  
Receipt Detail :  
Security Seal : **Not Available**  
Temperature : **4'c - Ice present**  
No. of samples received / analysed : **172 / 172**

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- (31/05/2023): This is an updated SRN which indicates amendments made to sample IDs, dates and times as per request from [REDACTED]
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2315943-104	08-May-2023 15:45	0908_SD001_230508	✓	✓
ES2315943-105	09-May-2023 11:14	0908_SD005_230509	✓	✓
ES2315943-106	08-May-2023 16:09	0908_SD006_230508	✓	✓
ES2315943-107	08-May-2023 15:59	0908_SD007_230508	✓	✓
ES2315943-108	08-May-2023 15:08	0908_SD009_230508	✓	✓
ES2315943-109	11-May-2023 10:25	0908_SD011_230511	✓	✓
ES2315943-110	09-May-2023 10:02	0908_SD014_230509	✓	✓
ES2315943-111	09-May-2023 10:53	0908_SD023_230509	✓	✓
ES2315943-112	09-May-2023 11:53	0908_SD024_230509	✓	✓
ES2315943-113	10-May-2023 14:07	0908_SD047_230510	✓	✓
ES2315943-114	10-May-2023 12:08	0908_SD048_230510	✓	✓
ES2315943-115	10-May-2023 10:51	0908_SD055_230510	✓	✓
ES2315943-116	11-May-2023 11:45	0908_SD060_230511	✓	✓
ES2315943-117	11-May-2023 10:09	0908_SD062_230511	✓	✓
ES2315943-119	11-May-2023 09:47	0908_SD081_230511	✓	✓
ES2315943-120	10-May-2023 13:50	0908_SD108_230510	✓	✓
ES2315943-121	11-May-2023 10:03	0908_SS110_230511	✓	✓
ES2315943-122	09-May-2023 09:50	0908_SS101_230509	✓	✓
ES2315943-123	09-May-2023 08:53	0908_SS102_230509	✓	✓
ES2315943-124	09-May-2023 14:43	0908_SS103_230509	✓	✓
ES2315943-125	09-May-2023 14:58	0908_SS104_230509	✓	✓
ES2315943-126	09-May-2023 15:20	0908_SS105_230509	✓	✓
ES2315943-127	09-May-2023 07:57	0908_SS106_230509	✓	✓
ES2315943-128	11-May-2023 10:27	0908_SS107_230511	✓	✓
ES2315943-129	11-May-2023 11:59	0908_SS109_230511	✓	✓
ES2315943-130	10-May-2023 11:20	0908_SD110_230510	✓	✓
ES2315943-131	11-May-2023 09:20	0908_SS111_230511	✓	✓
ES2315943-132	11-May-2023 09:53	0908_SS112_230511	✓	✓
ES2315943-146	09-May-2023 11:56	0908_SD079_230509	✓	✓
ES2315943-153	09-May-2023 08:53	0908_QC103_230509	✓	✓
ES2315943-154	08-May-2023 15:08	0908_QC104_230508	✓	✓
ES2315943-160	11-May-2023 10:27	0908_QC110_230511	✓	✓
ES2315943-163	09-May-2023 11:14	0908_QC113_230509	✓	✓



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2315943-001	08-May-2023 13:10	0908_MW106D_230508	✓
ES2315943-002	08-May-2023 12:43	0908_MW106S_230508	✓
ES2315943-003	12-May-2023 10:30	0908_MW107D_230512	✓
ES2315943-004	12-May-2023 10:30	0908_MW107S_230512	✓
ES2315943-005	10-May-2023 10:52	0908_MW108D_230510	✓
ES2315943-006	10-May-2023 10:59	0908_MW108S_230510	✓
ES2315943-007	10-May-2023 09:54	0908_MW471_230510	✓
ES2315943-008	09-May-2023 15:10	0908_MW121_230509	✓
ES2315943-009	09-May-2023 13:10	0908_MW123_230509	✓
ES2315943-010	09-May-2023 14:54	0908_MW124_230509	✓
ES2315943-011	09-May-2023 14:39	0908_MW125D_230509	✓
ES2315943-012	09-May-2023 14:34	0908_MW125S_230509	✓
ES2315943-013	11-May-2023 13:43	0908_MW126D_230511	✓
ES2315943-014	11-May-2023 13:45	0908_MW126S_230511	✓
ES2315943-015	09-May-2023 11:45	0908_MW128D_230509	✓
ES2315943-016	09-May-2023 11:34	0908_MW128S_230509	✓
ES2315943-017	11-May-2023 13:50	0908_MW130D_230511	✓
ES2315943-018	11-May-2023 13:53	0908_MW130S_230511	✓
ES2315943-019	11-May-2023 11:56	0908_MW132D_230511	✓
ES2315943-020	11-May-2023 12:04	0908_MW132S_230511	✓
ES2315943-021	12-May-2023 08:36	0908_MW134D_230512	✓
ES2315943-022	12-May-2023 08:48	0908_MW134I_230512	✓
ES2315943-023	09-May-2023 14:00	0908_MW146AD_230509	✓
ES2315943-024	09-May-2023 14:00	0908_MW146S_230509	✓
ES2315943-025	10-May-2023 15:13	0908_MW150D_230510	✓
ES2315943-026	10-May-2023 15:13	0908_MW150S_230510	✓
ES2315943-027	08-May-2023 12:17	0908_MW155_230508	✓
ES2315943-028	08-May-2023 09:45	0908_MW156D_230508	✓
ES2315943-029	08-May-2023 15:00	0908_MW158D_230508	✓
ES2315943-030	08-May-2023 15:06	0908_MW158S_230508	✓
ES2315943-031	11-May-2023 08:58	0908_MW159D_230511	✓
ES2315943-032	11-May-2023 08:57	0908_MW159S_230511	✓
ES2315943-033	11-May-2023 11:20	0908_MW160_230511	✓
ES2315943-034	11-May-2023 14:34	0908_MW161D_230511	✓
ES2315943-035	11-May-2023 14:34	0908_MW161S_230511	✓
ES2315943-036	09-May-2023 13:35	0908_MW162D_230509	✓
ES2315943-037	09-May-2023 13:22	0908_MW162S_230509	✓
ES2315943-038	09-May-2023 13:11	0908_MW163_230509	✓
ES2315943-039	10-May-2023 14:06	0908_MW166_230510	✓
ES2315943-040	10-May-2023 13:50	0908_MW167_230510	✓
ES2315943-041	10-May-2023 14:23	0908_MW168_230510	✓



WATER - EP231X  
PFAS - Full Suite (28 analytes)

ES2315943-042	10-May-2023 13:34	0908_MW169D_230510	✓
ES2315943-043	10-May-2023 13:34	0908_MW169S_230510	✓
ES2315943-044	10-May-2023 11:36	0908_MW171D_230510	✓
ES2315943-045	10-May-2023 11:36	0908_MW171S_230510	✓
ES2315943-046	10-May-2023 11:54	0908_MW172_230510	✓
ES2315943-047	10-May-2023 10:22	0908_MW175D_230510	✓
ES2315943-048	10-May-2023 14:56	0908_MW179D_230510	✓
ES2315943-049	10-May-2023 14:48	0908_MW179S_230510	✓
ES2315943-050	11-May-2023 11:03	0908_MW188S_230511	✓
ES2315943-051	09-May-2023 10:19	0908_MW195_230509	✓
ES2315943-052	10-May-2023 11:03	0908_MW196_230510	✓
ES2315943-053	10-May-2023 08:35	0908_MW198_230510	✓
ES2315943-054	10-May-2023 09:45	0908_MW200_230510	✓
ES2315943-055	10-May-2023 09:06	0908_MW201D_230510	✓
ES2315943-056	10-May-2023 09:27	0908_MW201S_230510	✓
ES2315943-057	10-May-2023 14:20	0908_MW202D_230510	✓
ES2315943-058	10-May-2023 14:26	0908_MW202S_230510	✓
ES2315943-059	08-May-2023 11:14	0908_MW208_230508	✓
ES2315943-060	08-May-2023 11:39	0908_MW210D_230508	✓
ES2315943-061	08-May-2023 11:29	0908_MW210S_230508	✓
ES2315943-062	08-May-2023 11:58	0908_MW212_230508	✓
ES2315943-063	11-May-2023 13:15	0908_MW232D_230511	✓
ES2315943-064	11-May-2023 13:21	0908_MW232S_230511	✓
ES2315943-065	10-May-2023 09:00	0908_MW240D_230510	✓
ES2315943-066	12-May-2023 10:46	0908_MW241D_230512	✓
ES2315943-067	12-May-2023 10:46	0908_MW241S_230512	✓
ES2315943-068	10-May-2023 10:22	0908_MW244D_230510	✓
ES2315943-069	10-May-2023 10:17	0908_MW244S_230510	✓
ES2315943-070	10-May-2023 11:51	0908_MW245D_230510	✓
ES2315943-071	10-May-2023 12:00	0908_MW245S_230510	✓
ES2315943-072	08-May-2023 14:47	0908_MW247D_230508	✓
ES2315943-073	08-May-2023 14:37	0908_MW247S_230508	✓
ES2315943-074	11-May-2023 10:32	0908_MW252S_230511	✓
ES2315943-075	09-May-2023 10:28	0908_MW255D_230509	✓
ES2315943-076	09-May-2023 10:36	0908_MW255S_230509	✓
ES2315943-077	08-May-2023 09:43	0908_MW256D_230508	✓
ES2315943-078	08-May-2023 10:05	0908_MW256S_230508	✓
ES2315943-079	08-May-2023 09:13	0908_MW257D_230508	✓
ES2315943-080	08-May-2023 09:21	0908_MW257S_230508	✓
ES2315943-081	09-May-2023 09:35	0908_MW258D_230509	✓
ES2315943-082	09-May-2023 09:19	0908_MW258S_230509	✓





WATER - EP231X  
PFAS - Full Suite (28 analytes)

ES2315943-083	08-May-2023 10:35	0908_MW260D_230508	✓
ES2315943-084	08-May-2023 10:26	0908_MW260S_230508	✓
ES2315943-085	09-May-2023 11:30	0908_MW263D_230509	✓
ES2315943-086	09-May-2023 11:32	0908_MW263S_230509	✓
ES2315943-087	12-May-2023 09:15	0908_MW264D_230512	✓
ES2315943-088	12-May-2023 09:15	0908_MW264S_230512	✓
ES2315943-089	11-May-2023 14:37	0908_MW278D_230511	✓
ES2315943-090	11-May-2023 14:47	0908_MW278S_230511	✓
ES2315943-091	09-May-2023 10:55	0908_MW279S_230509	✓
ES2315943-092	10-May-2023 09:23	0908_MW281S_230510	✓
ES2315943-093	10-May-2023 09:10	0908_MW282S_230510	✓
ES2315943-094	09-May-2023 13:18	0908_MW316D_230509	✓
ES2315943-095	12-May-2023 09:10	0908_MW317D_230512	✓
ES2315943-096	12-May-2023 09:23	0908_MW317S_230512	✓
ES2315943-097	11-May-2023 11:03	0908_MW318D_230511	✓
ES2315943-098	11-May-2023 11:03	0908_MW318S_230511	✓
ES2315943-099	08-May-2023 10:43	0908_MW406_230508	✓
ES2315943-100	09-May-2023 14:18	0908_MW433_230509	✓
ES2315943-101	10-May-2023 10:14	0908_MW466_230510	✓
ES2315943-102	10-May-2023 10:02	0908_MW468_230510	✓
ES2315943-103	11-May-2023 13:14	0908_MW829_230511	✓
ES2315943-118	09-May-2023 11:56	0908_SW079_230509	✓
ES2315943-133	08-May-2023 15:43	0908_SW001_230508	✓
ES2315943-134	09-May-2023 11:17	0908_SW005_230509	✓
ES2315943-135	08-May-2023 16:13	0908_SW006_230508	✓
ES2315943-136	08-May-2023 15:57	0908_SW007_230508	✓
ES2315943-137	08-May-2023 15:12	0908_SW009_230508	✓
ES2315943-138	11-May-2023 10:30	0908_SW011_230511	✓
ES2315943-139	09-May-2023 10:00	0908_SW014_230509	✓
ES2315943-140	09-May-2023 10:51	0908_SW023_230509	✓
ES2315943-141	10-May-2023 14:02	0908_SW047_230510	✓
ES2315943-142	10-May-2023 12:08	0908_SW048_230510	✓
ES2315943-143	10-May-2023 10:45	0908_SW055_230510	✓
ES2315943-144	11-May-2023 11:47	0908_SW060_230511	✓
ES2315943-145	11-May-2023 10:06	0908_SW062_230511	✓
ES2315943-147	11-May-2023 09:43	0908_SW081_230511	✓
ES2315943-148	10-May-2023 13:46	0908_SW108_230510	✓
ES2315943-149	10-May-2023 11:20	0908_SW110_230510	✓
ES2315943-150	08-May-2023 10:43	0908_QC100_230508	✓
ES2315943-151	08-May-2023 09:53	0908_QC101_230508	✓
ES2315943-152	08-May-2023 15:17	0908_QC102_230508	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2315943-155	09-May-2023 09:35	0908_QC105_230509		✓
ES2315943-156	09-May-2023 15:10	0908_QC106_230509		✓
ES2315943-157	09-May-2023 10:00	0908_QC107_230509		✓
ES2315943-158	10-May-2023 14:02	0908_QC108_230510		✓
ES2315943-159	09-May-2023 10:28	0908_QC109_230509		✓
ES2315943-161	09-May-2023 11:17	0908_QC111_230509		✓
ES2315943-162	11-May-2023 13:52	0908_QC112_230511		✓
ES2315943-164	12-May-2023 08:36	0908_QC114_230512		✓
ES2315943-165	09-May-2023 13:41	0908_QC115_230509		✓
ES2315943-166	10-May-2023 09:10	0908_QC117_230510		✓
ES2315943-167	10-May-2023 10:22	0908_QC119_230510		✓
ES2315943-168	08-May-2023 17:30	0908_QC300_230508		✓
ES2315943-169	09-May-2023 17:00	0908_QC301_230509		✓
ES2315943-170	10-May-2023 14:30	0908_QC302_230510		✓
ES2315943-171	11-May-2023 15:23	0908_QC303_230511		✓
ES2315943-172	12-May-2023 12:05	0908_QC304_230512		✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

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- \*AU Certificate of Analysis - NATA (COA)
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- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2316878**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 4
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: 52283	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: 0908		
Sampler	: [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 23-May-2023
Client Requested Due Date	: 29-May-2023	Scheduled Reporting Date	: <b>29-May-2023</b>

### Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 56 / 56

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2316878-037	17-May-2023 11:48	0908_SD019_230517	✓	✓
ES2316878-038	16-May-2023 13:25	0908_SD059_230516	✓	✓
ES2316878-039	16-May-2023 10:39	0908_SD254_230516	✓	✓
ES2316878-040	16-May-2023 10:31	0908_SD255_230516	✓	✓
ES2316878-041	16-May-2023 10:00	0908_SD259_230516	✓	✓
ES2316878-042	16-May-2023 10:20	0908_SD326_230516	✓	✓
ES2316878-043	15-May-2023 13:12	0908_SD600_230515	✓	✓
ES2316878-044	16-May-2023 13:35	0908_SS108_230516	✓	✓
ES2316878-049	16-May-2023 13:25	0908_QC116_230516	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2316878-001	17-May-2023 08:50	0908_MW104D_230517	✓
ES2316878-002	17-May-2023 08:27	0908_MW104S_230517	✓
ES2316878-003	19-May-2023 08:22	0908_MW122_230519	✓
ES2316878-004	18-May-2023 15:04	0908_MW137_230518	✓
ES2316878-005	15-May-2023 15:15	0908_MW139_2305	✓
ES2316878-006	18-May-2023 14:44	0908_MW140_230518	✓
ES2316878-007	15-May-2023 12:35	0908_MW147D_230515	✓
ES2316878-008	15-May-2023 12:53	0908_MW147S_230515	✓
ES2316878-009	17-May-2023 15:02	0908_MW178_230517	✓
ES2316878-010	17-May-2023 09:21	0908_MW184D_230517	✓
ES2316878-011	17-May-2023 09:32	0908_MW184S_230517	✓
ES2316878-012	15-May-2023 13:30	0908_MW230S_230515	✓
ES2316878-013	17-May-2023 12:53	0908_MW231D_230517	✓
ES2316878-014	17-May-2023 12:42	0908_MW231S_230516	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2316878-015	15-May-2023 10:10	0908_MW236D_230515	✓	
ES2316878-016	15-May-2023 10:03	0908_MW236S_230515	✓	
ES2316878-017	15-May-2023 11:51	0908_MW238D_230515	✓	
ES2316878-018	15-May-2023 11:49	0908_MW238S_230515	✓	
ES2316878-019	16-May-2023 11:13	0908_MW270D_230516	✓	
ES2316878-020	15-May-2023 11:09	0908_MW271S_230515	✓	
ES2316878-021	15-May-2023 10:53	0908_MW271D_230515	✓	
ES2316878-022	16-May-2023 11:26	0908_MW270S_230516	✓	
ES2316878-023	18-May-2023 09:05	0908_MW280S_230518	✓	
ES2316878-024	18-May-2023 10:05	0908_MW315D_230518	✓	
ES2316878-025	19-May-2023 09:45	0908_MW315S_230518	✓	
ES2316878-026	18-May-2023 13:25	0908_MW842_230518	✓	
ES2316878-027	18-May-2023 13:00	0908_MW844_230518	✓	
ES2316878-028	16-May-2023 14:25	0908_POT046_230516	✓	
ES2316878-029	15-May-2023 14:38	0908_POT085_230515	✓	
ES2316878-030	17-May-2023 11:06	0908_POT087_230517	✓	
ES2316878-031	17-May-2023 11:16	0908_POT089_230517	✓	
ES2316878-032	15-May-2023 15:25	0908_POT107_230515	✓	
ES2316878-033	17-May-2023 10:25	0908_POT144_230517	✓	
ES2316878-034	16-May-2023 12:55	0908_POT236_230516	✓	
ES2316878-035	16-May-2023 12:07	0908_POT257_230516	✓	
ES2316878-036	17-May-2023 13:44	0908_POT382_230517	✓	
ES2316878-045	17-May-2023 11:42	0908_SW019_230517	✓	
ES2316878-046	16-May-2023 13:20	0908_SW059_230516	✓	
ES2316878-047	16-May-2023 10:03	0908_SW259_230516	✓	
ES2316878-048	15-May-2023 13:09	0908_SW600_230515	✓	
ES2316878-050	17-May-2023 15:02	0908_QC118_230517	✓	
ES2316878-051	18-May-2023 10:05	0908_QC120_230518	✓	
ES2316878-052	15-May-2023 16:04	0908_QC305_230515	✓	
ES2316878-053	16-May-2023 04:27	0908_QC306_230516	✓	
ES2316878-054	17-May-2023 16:44	0908_QC307_230518	✓	
ES2316878-055	18-May-2023 04:48	0908_QC308_230519	✓	
ES2316878-056	19-May-2023 12:56	0908_QC309_230510	✓	

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



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RELINQUISHED BY:

RECEIVED BY: *[Signature]*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *23/5/23*

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: *[Redacted]*

PRIMARY SAMPLER: *[Redacted]*

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A

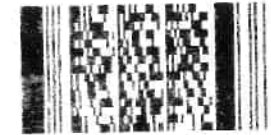
Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW104D_230517		17/05/2023 08:50 AM	WATER	ALS: 4 Non ALS: 0	No		X		
002	0908_MW104S_230517		17/05/2023 08:27 AM	WATER	ALS: 4 Non ALS: 0	No		X		
003	0908_MW122_230519		19/05/2023 08:22 AM	WATER	ALS: 4 Non ALS: 0	No		X		
004	0908_MW137_230518		18/05/2023 03:04 PM	WATER	ALS: 4 Non ALS: 0	No		X		
005	0908_MW139_2305		15/05/2023 03:15 PM	WATER	ALS: 4 Non ALS: 0	No		X		
006	0908_MW140_230518		18/05/2023 02:44 PM	WATER	ALS: 4 Non ALS: 0	No		X		
007	0908_MW147D_230515		15/05/2023 12:35 PM	WATER	ALS: 4 Non ALS: 0	No		X		
008	0908_MW147S_230515		15/05/2023 12:53 PM	WATER	ALS: 4 Non ALS: 0	No		X		
009	0908_MW178_230517		17/05/2023 03:02 PM	WATER	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2316878**



Telephone : + 61-2-8784 8555



RELINQUISHED BY:

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RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *23/5/23*

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
010	0908_MW184D_230517		17/05/2023 09:21 AM	WATER	ALS: 4 Non ALS: 0	No		X		
011	0908_MW184S_230517		17/05/2023 09:32 AM	WATER	ALS: 5 Non ALS: 0	No		X		
012	0908_MW230S_230515		15/05/2023 01:30 PM	WATER	ALS: 4 Non ALS: 0	No		X		
013	0908_MW231D_230517		17/05/2023 12:53 PM	WATER	ALS: 4 Non ALS: 0	No		X		
014	0908_MW231S_230516		17/05/2023 12:42 PM	WATER	ALS: 4 Non ALS: 0	No		X		
015	0908_MW236D_230515		15/05/2023 10:10 AM	WATER	ALS: 4 Non ALS: 0	No		X		
016	0908_MW236S_230515		15/05/2023 10:03 AM	WATER	ALS: 4 Non ALS: 0	No		X		
017	0908_MW238D_230515		15/05/2023 11:51 AM	WATER	ALS: 4 Non ALS: 0	No		X		
018	0908_MW238S_230515		15/05/2023 11:49 AM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

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RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
019	0908_MW270D_230516		16/05/2023 11:13 AM	WATER	ALS: 4 Non ALS: 0	No		X		
020	0908_MW271S_230515		15/05/2023 11:09 AM	WATER	ALS: 4 Non ALS: 0	No		X		
021	0908_MW271D_230515		15/05/2023 10:53 AM	WATER	ALS: 4 Non ALS: 0	No		X		
022	0908_MW270S_230516		16/05/2023 11:26 AM	WATER	ALS: 4 Non ALS: 0	No		X		
023	0908_MW280S_230518		18/05/2023 09:05 AM	WATER	ALS: 4 Non ALS: 0	No		X		
024	0908_MW315D_230518		18/05/2023 10:05 AM	WATER	ALS: 4 Non ALS: 0	No		X		
025	0908_MW315S_230518		19/05/2023 09:45 AM	WATER	ALS: 4 Non ALS: 0	No		X		
026	0908_MW842_230518		18/05/2023 01:25 PM	WATER	ALS: 4 Non ALS: 0	No		X		
027	0908_MW844_230518		18/05/2023 01:00 PM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

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RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: 23/5/23 3pm

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
028	0908_POT046_230516		16/05/2023 02:25 PM	WATER	ALS: 4 Non ALS: 0	No		X		
029	0908_POT085_230515		15/05/2023 02:38 PM	WATER	ALS: 4 Non ALS: 0	No		X		
030	0908_POT087_230517		17/05/2023 11:06 AM	WATER	ALS: 4 Non ALS: 0	No		X		
031	0908_POT089_230517		17/05/2023 11:16 AM	WATER	ALS: 4 Non ALS: 0	No		X		
032	0908_POT107_230515		15/05/2023 03:25 PM	WATER	ALS: 4 Non ALS: 0	No		X		
033	0908_POT144_230517		17/05/2023 10:25 AM	WATER	ALS: 4 Non ALS: 0	No		X		
034	0908_POT236_230516		16/05/2023 12:55 PM	WATER	ALS: 4 Non ALS: 0	No		X		
035	0908_POT257_230516		16/05/2023 12:07 PM	WATER	ALS: 4 Non ALS: 0	No		X		
036	0908_POT382_230517		17/05/2023 01:44 PM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

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DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
037	0908_SD019_230517		17/05/2023 11:48 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
038	0908_SD059_230516		16/05/2023 01:25 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
039	0908_SD254_230516		16/05/2023 10:39 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
040	0908_SD255_230516		16/05/2023 10:31 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
041	0908_SD259_230516		16/05/2023 10:00 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
042	0908_SD326_230516		16/05/2023 10:20 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
043	0908_SD600_230515		15/05/2023 01:12 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
044	0908_SS108_230516		16/05/2023 01:35 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
045	0908_SW019_230517		17/05/2023 11:42 AM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY: *[Signature]*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: 23/5/23 3pm

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 80612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
046	0908_SW059_230516		16/05/2023 01:20 PM	WATER	ALS: 4 Non ALS: 0	No		X		
047	0908_SW259_230516		16/05/2023 10:03 AM	WATER	ALS: 4 Non ALS: 0	No		X		
048	0908_SW600_230515		15/05/2023 01:09 PM	WATER	ALS: 4 Non ALS: 0	No		X		
049	0908_QC116_230516		16/05/2023 01:25 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
050	0908_QC118_230517		17/05/2023 03:02 PM	WATER	ALS: 4 Non ALS: 0	No		X		
051	0908_QC120_230518		18/05/2023 10:05 AM	WATER	ALS: 4 Non ALS: 0	No		X		
052	0908_QC305_230515		15/05/2023 04:04 PM	WATER	ALS: 4 Non ALS: 0	No		X		
053	0908_QC306_230516		16/05/2023 04:27 AM	WATER	ALS: 4 Non ALS: 0	No		X		
054	0908_QC307_230518		17/05/2023 04:44 PM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY: *[Signature]*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *23/5/23*

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: *[Redacted]*

PRIMARY SAMPLER: *[Redacted]*

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
055	0908_QC308_230519		18/05/2023 04:48 AM	WATER	ALS: 4 Non ALS: 0	No		X		
056	0908_QC309_230510		19/05/2023 12:56 PM	WATER	ALS: 4 Non ALS: 0	No		X		

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

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DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW104D_230517	HDPE (no PTFE)	20 mL	00350822026991	Grey	No	
001	0908_MW104D_230517	HDPE (no PTFE)	20 mL	00350822027067	Grey	No	
001	0908_MW104D_230517	HDPE (no PTFE)	20 mL	00350822027045	Grey	No	
001	0908_MW104D_230517	HDPE (no PTFE)	20 mL	00350822027184	Grey	No	
002	0908_MW104S_230517	HDPE (no PTFE)	20 mL	00350822027016	Grey	No	
002	0908_MW104S_230517	HDPE (no PTFE)	20 mL	00350822027536	Grey	No	
002	0908_MW104S_230517	HDPE (no PTFE)	20 mL	00350822027420	Grey	No	
002	0908_MW104S_230517	HDPE (no PTFE)	20 mL	00350822027013	Grey	No	
003	0908_MW122_230519	HDPE (no PTFE)	20 mL	00352101040682	Grey	No	
003	0908_MW122_230519	HDPE (no PTFE)	20 mL	00352101040450	Grey	No	
003	0908_MW122_230519	HDPE (no PTFE)	20 mL	00352101040782	Grey	No	
003	0908_MW122_230519	HDPE (no PTFE)	20 mL	00352101040777	Grey	No	
004	0908_MW137_230518	HDPE (no PTFE)	20 mL	00352101040507	Grey	No	
004	0908_MW137_230518	HDPE (no PTFE)	20 mL	00350621036793	Grey	No	
004	0908_MW137_230518	HDPE (no PTFE)	20 mL	00350621036653	Grey	No	
004	0908_MW137_230518	HDPE (no PTFE)	20 mL	00352101040441	Grey	No	
005	0908_MW139_2305	HDPE (no PTFE)	20 mL	00350822027427	Grey	No	
005	0908_MW139_2305	HDPE (no PTFE)	20 mL	00350822027090	Grey	No	
005	0908_MW139_2305	HDPE (no PTFE)	20 mL	00350822027072	Grey	No	
005	0908_MW139_2305	HDPE (no PTFE)	20 mL	00350822027276	Grey	No	
006	0908_MW140_230518	HDPE (no PTFE)	20 mL	00350821014159	Grey	No	
006	0908_MW140_230518	HDPE (no PTFE)	20 mL	00350821014078	Grey	No	
006	0908_MW140_230518	HDPE (no PTFE)	20 mL	00352101040527	Grey	No	
006	0908_MW140_230518	HDPE (no PTFE)	20 mL	00352101040434	Grey	No	
007	0908_MW147D_230515	HDPE (no PTFE)	20 mL	00350822026961	Grey	No	
007	0908_MW147D_230515	HDPE (no PTFE)	20 mL	00350822027109	Grey	No	

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME: 23/05/23

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

007	0908_MW147D_230515	HDPE (no PTFE)	20 mL	00350822027537	Grey	No	
007	0908_MW147D_230515	HDPE (no PTFE)	20 mL	00350822027475	Grey	No	
008	0908_MW147S_230515	HDPE (no PTFE)	20 mL	00350822026971	Grey	No	
008	0908_MW147S_230515	HDPE (no PTFE)	20 mL	00350822027348	Grey	No	
008	0908_MW147S_230515	HDPE (no PTFE)	20 mL	00350822026965	Grey	No	
008	0908_MW147S_230515	HDPE (no PTFE)	20 mL	00350822027125	Grey	No	
009	0908_MW178_230517	HDPE (no PTFE)	20 mL	00350822027406	Grey	No	
009	0908_MW178_230517	HDPE (no PTFE)	20 mL	00350822027064	Grey	No	
009	0908_MW178_230517	HDPE (no PTFE)	20 mL	00350822063032	Grey	No	
009	0908_MW178_230517	HDPE (no PTFE)	20 mL	00350822062984	Grey	No	
010	0908_MW184D_230517	HDPE (no PTFE)	20 mL	00350822063070	Grey	No	
010	0908_MW184D_230517	HDPE (no PTFE)	20 mL	00350822063138	Grey	No	
010	0908_MW184D_230517	HDPE (no PTFE)	20 mL	00350822063195	Grey	No	
010	0908_MW184D_230517	HDPE (no PTFE)	20 mL	00350822063253	Grey	No	
011	0908_MW184S_230517	HDPE (no PTFE)	20 mL	00350822063165	Grey	No	
011	0908_MW184S_230517	HDPE (no PTFE)	20 mL	00350822027298	Grey	No	
011	0908_MW184S_230517	HDPE (no PTFE)	20 mL	00350822026969	Grey	No	
011	0908_MW184S_230517	HDPE (no PTFE)	20 mL	00350822027050	Grey	No	
011	0908_MW184S_230517	HDPE (no PTFE)	20 mL	00350822027239	Grey	No	
012	0908_MW230S_230515	HDPE (no PTFE)	20 mL	00350822027153	Grey	No	
012	0908_MW230S_230515	HDPE (no PTFE)	20 mL	00350822027035	Grey	No	
012	0908_MW230S_230515	HDPE (no PTFE)	20 mL	00350822027387	Grey	No	
012	0908_MW230S_230515	HDPE (no PTFE)	20 mL	00350822027310	Grey	No	
013	0908_MW231D_230517	HDPE (no PTFE)	20 mL	00350822027007	Grey	No	
013	0908_MW231D_230517	HDPE (no PTFE)	20 mL	00350822027302	Grey	No	
013	0908_MW231D_230517	HDPE (no PTFE)	20 mL	00350822026959	Grey	No	
013	0908_MW231D_230517	HDPE (no PTFE)	20 mL	00350822027205	Grey	No	



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PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

014	0908_MW231S_230516	HDPE (no PTFE)	20 mL	00350822027369	Grey	No	
014	0908_MW231S_230516	HDPE (no PTFE)	20 mL	00350822063097	Grey	No	
014	0908_MW231S_230516	HDPE (no PTFE)	20 mL	00350822027111	Grey	No	
014	0908_MW231S_230516	HDPE (no PTFE)	20 mL	00350822063009	Grey	No	
015	0908_MW236D_230515	HDPE (no PTFE)	20 mL	00350822027306	Grey	No	
015	0908_MW236D_230515	HDPE (no PTFE)	20 mL	00350822027267	Grey	No	
015	0908_MW236D_230515	HDPE (no PTFE)	20 mL	00350822027386	Grey	No	
015	0908_MW236D_230515	HDPE (no PTFE)	20 mL	00350822027410	Grey	No	
016	0908_MW236S_230515	HDPE (no PTFE)	20 mL	00350822027059	Grey	No	
016	0908_MW236S_230515	HDPE (no PTFE)	20 mL	00350822027132	Grey	No	
016	0908_MW236S_230515	HDPE (no PTFE)	20 mL	00350822027336	Grey	No	
016	0908_MW236S_230515	HDPE (no PTFE)	20 mL	00350822027041	Grey	No	
017	0908_MW238D_230515	HDPE (no PTFE)	20 mL	00350822027313	Grey	No	
017	0908_MW238D_230515	HDPE (no PTFE)	20 mL	00350822026977	Grey	No	
017	0908_MW238D_230515	HDPE (no PTFE)	20 mL	00350822027051	Grey	No	
017	0908_MW238D_230515	HDPE (no PTFE)	20 mL	00350822027442	Grey	No	
018	0908_MW238S_230515	HDPE (no PTFE)	20 mL	00350822027133	Grey	No	
018	0908_MW238S_230515	HDPE (no PTFE)	20 mL	00350822027079	Grey	No	
018	0908_MW238S_230515	HDPE (no PTFE)	20 mL	00350822027087	Grey	No	
018	0908_MW238S_230515	HDPE (no PTFE)	20 mL	00350822027012	Grey	No	
019	0908_MW270D_230516	HDPE (no PTFE)	20 mL	00350822027262	Grey	No	
019	0908_MW270D_230516	HDPE (no PTFE)	20 mL	00350822026973	Grey	No	
019	0908_MW270D_230516	HDPE (no PTFE)	20 mL	00350822026997	Grey	No	
019	0908_MW270D_230516	HDPE (no PTFE)	20 mL	00350822026944	Grey	No	
020	0908_MW271S_230515	HDPE (no PTFE)	20 mL	00350822027083	Grey	No	
020	0908_MW271S_230515	HDPE (no PTFE)	20 mL	00350822027223	Grey	No	
020	0908_MW271S_230515	HDPE (no PTFE)	20 mL	00350822027145	Grey	No	

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

Handwritten signature  
 DATE TIME: 23/5/23

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

020	0908_MW271S_230515	HDPE (no PTFE)	20 mL	00350822027429	Grey	No	
021	0908_MW271D_230515	HDPE (no PTFE)	20 mL	00350822027523	Grey	No	
021	0908_MW271D_230515	HDPE (no PTFE)	20 mL	00350822027530	Grey	No	
021	0908_MW271D_230515	HDPE (no PTFE)	20 mL	00350822027261	Grey	No	
021	0908_MW271D_230515	HDPE (no PTFE)	20 mL	00350822027395	Grey	No	
022	0908_MW270S_230516	HDPE (no PTFE)	20 mL	00350822026984	Grey	No	
022	0908_MW270S_230516	HDPE (no PTFE)	20 mL	00350522084735	Grey	No	
022	0908_MW270S_230516	HDPE (no PTFE)	20 mL	00350822027144	Grey	No	
022	0908_MW270S_230516	HDPE (no PTFE)	20 mL	00350522084790	Grey	No	
023	0908_MW280S_230518	HDPE (no PTFE)	20 mL	00352101040741	Grey	No	
023	0908_MW280S_230518	HDPE (no PTFE)	20 mL	00352101040565	Grey	No	
023	0908_MW280S_230518	HDPE (no PTFE)	20 mL	00352101040422	Grey	No	
023	0908_MW280S_230518	HDPE (no PTFE)	20 mL	00352101040664	Grey	No	
024	0908_MW315D_230518	HDPE (no PTFE)	20 mL	00352101040571	Grey	No	
024	0908_MW315D_230518	HDPE (no PTFE)	20 mL	00352101040746	Grey	No	
024	0908_MW315D_230518	HDPE (no PTFE)	20 mL	00352101040295	Grey	No	
024	0908_MW315D_230518	HDPE (no PTFE)	20 mL	00352101040702	Grey	No	
025	0908_MW315S_230518	HDPE (no PTFE)	20 mL	00352101040382	Grey	No	
025	0908_MW315S_230518	HDPE (no PTFE)	20 mL	00352101040765	Grey	No	
025	0908_MW315S_230518	HDPE (no PTFE)	20 mL	00352101040593	Grey	No	
025	0908_MW315S_230518	HDPE (no PTFE)	20 mL	00352101040286	Grey	No	
026	0908_MW842_230518	HDPE (no PTFE)	20 mL	00350821014180	Grey	No	
026	0908_MW842_230518	HDPE (no PTFE)	20 mL	00350621036841	Grey	No	
026	0908_MW842_230518	HDPE (no PTFE)	20 mL	00350621036675	Grey	No	
026	0908_MW842_230518	HDPE (no PTFE)	20 mL	00350821014177	Grey	No	
027	0908_MW844_230518	HDPE (no PTFE)	20 mL	00352101040550	Grey	No	
027	0908_MW844_230518	HDPE (no PTFE)	20 mL	00350821014127	Grey	No	

RELINQUISHED BY:

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RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

027	0908_MW844_230518	HDPE (no PTFE)	20 mL	00352101040425	Grey	No	
027	0908_MW844_230518	HDPE (no PTFE)	20 mL	00350821013984	Grey	No	
028	0908_POT046_230516	HDPE (no PTFE)	20 mL	00350822027338	Grey	No	
028	0908_POT046_230516	HDPE (no PTFE)	20 mL	00350822027183	Grey	No	
028	0908_POT046_230516	HDPE (no PTFE)	20 mL	00350522084788	Grey	No	
028	0908_POT046_230516	HDPE (no PTFE)	20 mL	00350522084593	Grey	No	
029	0908_POT085_230515	HDPE (no PTFE)	20 mL	00350822027100	Grey	No	
029	0908_POT085_230515	HDPE (no PTFE)	20 mL	00350822027075	Grey	No	
029	0908_POT085_230515	HDPE (no PTFE)	20 mL	00350822027199	Grey	No	
029	0908_POT085_230515	HDPE (no PTFE)	20 mL	00350822027428	Grey	No	
030	0908_POT087_230517	HDPE (no PTFE)	20 mL	00350822063084	Grey	No	
030	0908_POT087_230517	HDPE (no PTFE)	20 mL	00350822063020	Grey	No	
030	0908_POT087_230517	HDPE (no PTFE)	20 mL	00350822063047	Grey	No	
030	0908_POT087_230517	HDPE (no PTFE)	20 mL	00350822063057	Grey	No	
031	0908_POT089_230517	HDPE (no PTFE)	20 mL	00350822027127	Grey	No	
031	0908_POT089_230517	HDPE (no PTFE)	20 mL	00350822063115	Grey	No	
031	0908_POT089_230517	HDPE (no PTFE)	20 mL	00350822063013	Grey	No	
031	0908_POT089_230517	HDPE (no PTFE)	20 mL	00350822027447	Grey	No	
032	0908_POT107_230515	HDPE (no PTFE)	20 mL	00350822027210	Grey	No	
032	0908_POT107_230515	HDPE (no PTFE)	20 mL	00350822027260	Grey	No	
032	0908_POT107_230515	HDPE (no PTFE)	20 mL	00350822027003	Grey	No	
032	0908_POT107_230515	HDPE (no PTFE)	20 mL	00350822027250	Grey	No	
033	0908_POT144_230517	HDPE (no PTFE)	20 mL	00350822027092	Grey	No	
033	0908_POT144_230517	HDPE (no PTFE)	20 mL	00350822026986	Grey	No	
033	0908_POT144_230517	HDPE (no PTFE)	20 mL	00350822027143	Grey	No	
033	0908_POT144_230517	HDPE (no PTFE)	20 mL	00350822027014	Grey	No	
034	0908_POT236_230516	HDPE (no PTFE)	20 mL	00350822027440	Grey	No	

RELINQUISHED BY:

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RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

034	0908_POT236_230516	HDPE (no PTFE)	20 mL	00350822027168	Grey	No	
034	0908_POT236_230516	HDPE (no PTFE)	20 mL	00350822027522	Grey	No	
034	0908_POT236_230516	HDPE (no PTFE)	20 mL	00350822027532	Grey	No	
035	0908_POT257_230516	HDPE (no PTFE)	20 mL	00350822027124	Grey	No	
035	0908_POT257_230516	HDPE (no PTFE)	20 mL	00350822063094	Grey	No	
035	0908_POT257_230516	HDPE (no PTFE)	20 mL	00350822063018	Grey	No	
035	0908_POT257_230516	HDPE (no PTFE)	20 mL	00350822027066	Grey	No	
036	0908_POT382_230517	HDPE (no PTFE)	20 mL	00350822027123	Grey	No	
036	0908_POT382_230517	HDPE (no PTFE)	20 mL	00350822027279	Grey	No	
036	0908_POT382_230517	HDPE (no PTFE)	20 mL	00350822027194	Grey	No	
036	0908_POT382_230517	HDPE (no PTFE)	20 mL	00350822027403	Grey	No	
037	0908_SD019_230517	HDPE Soil Jar	200 mL	00621122045963	Grey	No	
038	0908_SD059_230516	HDPE Soil Jar	200 mL	00621122046355	Grey	No	
039	0908_SD254_230516	HDPE Soil Jar	200 mL	00621122046395	Grey	No	
040	0908_SD255_230516	HDPE Soil Jar	200 mL	00621122046401	Grey	No	
041	0908_SD259_230516	HDPE Soil Jar	200 mL	00621122046366	Grey	No	
042	0908_SD326_230516	HDPE Soil Jar	200 mL	00621122046382	Grey	No	
043	0908_SD600_230515	HDPE Soil Jar	200 mL	00621122046353	Grey	No	
044	0908_SS108_230516	HDPE Soil Jar	200 mL	00621122046311	Grey	No	
045	0908_SW019_230517	HDPE (no PTFE)	20 mL	00350822027455	Grey	No	
045	0908_SW019_230517	HDPE (no PTFE)	20 mL	00350822027175	Grey	No	
045	0908_SW019_230517	HDPE (no PTFE)	20 mL	00350822027063	Grey	No	
045	0908_SW019_230517	HDPE (no PTFE)	20 mL	00350822027033	Grey	No	
046	0908_SW059_230516	HDPE (no PTFE)	20 mL	00350822063092	Grey	No	
046	0908_SW059_230516	HDPE (no PTFE)	20 mL	00350822063096	Grey	No	
046	0908_SW059_230516	HDPE (no PTFE)	20 mL	00350822063174	Grey	No	
046	0908_SW059_230516	HDPE (no PTFE)	20 mL	00350822063211	Grey	No	

RELINQUISHED BY:

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RECEIVED BY:

DATE TIME:

DATE TIME: *25/5/23 3:30*

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: *[Redacted]*

PRIMARY SAMPLER: *[Redacted]*

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

047	0908_SW259_230516	HDPE (no PTFE)	20 mL	00350822027423	Grey	No	
047	0908_SW259_230516	HDPE (no PTFE)	20 mL	00350822027287	Grey	No	
047	0908_SW259_230516	HDPE (no PTFE)	20 mL	00350822027104	Grey	No	
047	0908_SW259_230516	HDPE (no PTFE)	20 mL	00350822027368	Grey	No	
048	0908_SW600_230515	HDPE (no PTFE)	20 mL	00350822027358	Grey	No	
048	0908_SW600_230515	HDPE (no PTFE)	20 mL	00350822027300	Grey	No	
048	0908_SW600_230515	HDPE (no PTFE)	20 mL	00350822027004	Grey	No	
048	0908_SW600_230515	HDPE (no PTFE)	20 mL	00350822027118	Grey	No	
049	0908_QC116_230516	HDPE Soil Jar	200 mL	00621122046301	Grey	No	
050	0908_QC118_230517	HDPE (no PTFE)	20 mL	00350822063208	Grey	No	
050	0908_QC118_230517	HDPE (no PTFE)	20 mL	00350822063144	Grey	No	
050	0908_QC118_230517	HDPE (no PTFE)	20 mL	00350822063206	Grey	No	
050	0908_QC118_230517	HDPE (no PTFE)	20 mL	00350822063110	Grey	No	
051	0908_QC120_230518	HDPE (no PTFE)	20 mL	00350821014226	Grey	No	
051	0908_QC120_230518	HDPE (no PTFE)	20 mL	00352101023213	Grey	No	
051	0908_QC120_230518	HDPE (no PTFE)	20 mL	00350821014227	Grey	No	
051	0908_QC120_230518	HDPE (no PTFE)	20 mL	00352101023188	Grey	No	
052	0908_QC305_230515	HDPE (no PTFE)	20 mL	00350822027412	Grey	No	
052	0908_QC305_230515	HDPE (no PTFE)	20 mL	00350822027272	Grey	No	
052	0908_QC305_230515	HDPE (no PTFE)	20 mL	00350822027464	Grey	No	
052	0908_QC305_230515	HDPE (no PTFE)	20 mL	00350822027052	Grey	No	
053	0908_QC306_230516	HDPE (no PTFE)	20 mL	00350822063051	Grey	No	
053	0908_QC306_230516	HDPE (no PTFE)	20 mL	00350822063149	Grey	No	
053	0908_QC306_230516	HDPE (no PTFE)	20 mL	00350822063033	Grey	No	
053	0908_QC306_230516	HDPE (no PTFE)	20 mL	00350822062981	Grey	No	
054	0908_QC307_230518	HDPE (no PTFE)	20 mL	00350822027170	Grey	No	
054	0908_QC307_230518	HDPE (no PTFE)	20 mL	00350822063233	Grey	No	

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DATE TIME:

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DATE TIME:  
23/5/23 3p

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908

ORDER NO:

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

054	0908_QC307_230518	HDPE (no PTFE)	20 mL	00350822063273	Grey	No	
054	0908_QC307_230518	HDPE (no PTFE)	20 mL	00350822027489	Grey	No	
055	0908_QC308_230519	HDPE (no PTFE)	20 mL	00350621036768	Grey	No	
055	0908_QC308_230519	HDPE (no PTFE)	20 mL	00350621036770	Grey	No	
055	0908_QC308_230519	HDPE (no PTFE)	20 mL	00350821014271	Grey	No	
055	0908_QC308_230519	HDPE (no PTFE)	20 mL	00350821014279	Grey	No	
056	0908_QC309_230510	HDPE (no PTFE)	20 mL	00350821014264	Grey	No	
056	0908_QC309_230510	HDPE (no PTFE)	20 mL	00350821014011	Grey	No	
056	0908_QC309_230510	HDPE (no PTFE)	20 mL	00350821014219	Grey	No	
056	0908_QC309_230510	HDPE (no PTFE)	20 mL	00350821014154	Grey	No	

**Total Bottle Count: ALS: 198, Non ALS: 0**



# CERTIFICATE OF ANALYSIS

Work Order : **ES2316895**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 24-May-2023

C-O-C number : 52447

Issue Date : 07-Jun-2023 15:49

Sampler : [REDACTED] [REDACTED]

Site : Additional samples

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (07/06/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 7/06/2023. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_SW158_230516	----	----	----	----
		Sampling date / time		16-May-2023 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2316895-001	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.06</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.06</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_SW158_230516		----	----	----	----
		Sampling date / time	16-May-2023 15:30		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2316895-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.12</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.12</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.12</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>111</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>103</b>	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD158_230516	----	----	----	----
Sampling date / time		16-May-2023 15:35		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2316895-002	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>63.5</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0006</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0042</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD158_230516	----	----	----	----
Sampling date / time				16-May-2023 15:35	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2316895-002	-----	-----	-----	-----	
				Result	---	---	---	---	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0048</b>	----	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0048</b>	----	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0048</b>	----	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>104</b>	----	----	----	----	
13C8-PFOA	----	0.0002	%	<b>118</b>	----	----	----	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2316895**

Page : 1 of 11

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 24-May-2023

C-O-C number : 52447

Issue Date : 07-Jun-2023

Sampler : [REDACTED]

Site : Additional samples

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5070989)</b>									
ES2316931-004	Anonymous	EA055: Moisture Content	----	0.1	%	7.0	7.3	5.1	0% - 20%
ES2317080-001	Anonymous	EA055: Moisture Content	----	0.1	%	4.0	3.6	10.5	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5069362)</b>									
EP2306007-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2316838-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0006	0.0007	19.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0008	0.0009	16.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5069362)</b>									
EP2306007-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0024	0.0022	7.3	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0008	0.0008	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0007	0.0006	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0005	0.0004	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5069362) - continued</b>									
EP2306007-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2316838-004	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5069362)</b>									
EP2306007-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2316838-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5069362)</b>									
EP2306007-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	0.0024	0.0023	6.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2316838-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5069837)</b>									
ES2316895-001	0908_SW158_230516	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317022-058	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5069837)</b>									
ES2316895-001	0908_SW158_230516	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5069837) - continued</b>									
ES2316895-001	0908_SW158_230516	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317022-058	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5069837)</b>									
ES2316895-001	0908_SW158_230516	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317022-058	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5069837)</b>									
ES2316895-001	0908_SW158_230516	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317022-058	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5069837)</b>									
ES2316895-001	0908_SW158_230516	EP231X: Sum of PFAS	----	0.01	µg/L	0.12	0.13	8.0	0% - 50%
ES2317022-058	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5069362)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.2	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5069362)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	108	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.0	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	111	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069362)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	98.9	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.9	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5069362)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5069362) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	99.2	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	102	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	117	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	94.4	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5069837)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.8	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	103	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	98.4	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	108	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5069837)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	102	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.4	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	116	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	101	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.6	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069837)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	105	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.3	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.8	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.2	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069837) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	114	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5069837)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	85.2	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5069362)</b>							
EP2306007-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	123	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	81.6	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	95.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	92.4	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.0	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	88.4	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5069362)</b>							
EP2306007-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	112	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	72.0	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	88.8	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	97.6	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	109	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	104	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	116	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	119	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	99.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	122	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069362)</b>					
EP2306007-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	104	67.0	137



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069362) - continued</b>							
EP2306007-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	122	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	118	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	105	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	112	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5069362)</b>							
EP2306007-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	65.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	125	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	123	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5069837)</b>							
ES2317022-039	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	97.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	92.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	112	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	109	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	102	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	121	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5069837)</b>							
ES2317022-039	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	109	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	114	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	120	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	125	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	108	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	124	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	107	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	108	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	97.8	71.0	132





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5069837)</b>							
ES2317022-039	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	106	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	104	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	107	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	118	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	99.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	113	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	113	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5069837)</b>							
ES2317022-039	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	111	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	110	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	121	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	109	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2316895	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: Additional samples	Issue Date	: 07-Jun-2023
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD158_230516	16-May-2023	----	----	----	25-May-2023	30-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	12-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	12-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW158_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	12-Nov-2023	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW158_230516	16-May-2023	25-May-2023	12-Nov-2023	✔	26-May-2023	12-Nov-2023	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW158_230516	16-May-2023	25-May-2023	12-Nov-2023	✔	26-May-2023	12-Nov-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

**Work Order** : ES2316895  
**Amendment** : 1

**Client** : AECOM AUSTRALIA PTY LTD  
**Contact** : [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

**E-mail** : [REDACTED]  
**Telephone** : ----  
**Facsimile** : ----

**E-mail** : [REDACTED]  
**Telephone** : +61 2 8784 8555  
**Facsimile** : +61-2-8784 8500

**Project** : NSW\_0908\_PFASOMP\_23  
**Order number** : 60612562\_2.1

**Page** : 1 of 3  
**Quote number** : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

**C-O-C number** : 52447  
**QC Level** : NEPM 2013 B3 & ALS QC Standard

**Site** : Additional samples  
**Sampler** : [REDACTED]

### Dates

**Date Samples Received** : 23-May-2023 15:00  
**Issue Date** : 07-Jun-2023  
**Client Requested Due Date** : 29-May-2023  
**Scheduled Reporting Date** : **29-May-2023**

### Delivery Details

**Mode of Delivery** : Undefined  
**Security Seal** : Intact.  
**No. of coolers/boxes** : 2  
**Temperature** : 5.8°C - Ice present  
**Receipt Detail** :  
**No. of samples received / analysed** : 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN to correct sample IDs as per [REDACTED] on 23/05/23.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2316895-002	16-May-2023 15:35	0908_SD158_230516	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2316895-001	16-May-2023 15:30	0908_SW158_230516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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**CHAIN OF CUSTODY**

COC#: 52447 ALS Laboratory: ES Sydney

RELINQUISHED BY:

RECEIVED BY: *[Signature]*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Additional samples

ORDER NO:

PROJECT MANAGER: [REDACTED]PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

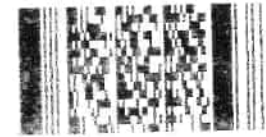
Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE DETAILS							ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_OTH080_230516		15/05/2023 03:30 PM	WATER	ALS: 4 Non ALS: 0	Yes		-		
002	0908_OTH079_230516		15/05/2023 03:35 PM	SOIL	ALS: 1 Non ALS: 0	Yes	-			

Environmental Division  
Sydney  
Work Order Reference  
**ES2316895**



Telephone + 61-2-6754 8555

RELINQUISHED BY:

RECEIVED BY: *[Signature]*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *23/5/23*

DATE TIME:

DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFSOMP\_23

SITE: Additional samples

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_OTH080_230516	HDPE (no PTFE)	20 mL	00350822027458	Grey	No	
001	0908_OTH080_230516	HDPE (no PTFE)	20 mL	00350822027024	Grey	No	
001	0908_OTH080_230516	HDPE (no PTFE)	20 mL	00350822027149	Grey	No	
001	0908_OTH080_230516	HDPE (no PTFE)	20 mL	00350822027073	Grey	No	
002	0908_OTH079_230516	HDPE Soil Jar	200 mL	00621122046307	Grey	No	

**Total Bottle Count: ALS: 5, Non ALS: 0**



# CERTIFICATE OF ANALYSIS

**Work Order** : **ES2317275**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : MR [REDACTED]  
**Address** : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
**Telephone** : +61 02 8934 0000  
**Project** : NSW\_0908\_PFASOMP\_23  
**Order number** : 60612562\_2.1  
**C-O-C number** : ----  
**Sampler** : [REDACTED] and [REDACTED]  
**Site** : ----  
**Quote number** : SY/139/19 v4 60612562\_2.1  
**No. of samples received** : 4  
**No. of samples analysed** : 4

**Page** : 1 of 9  
**Laboratory** : Environmental Division Sydney  
**Contact** : [REDACTED]  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 23-May-2023 15:00  
**Date Analysis Commenced** : 25-May-2023  
**Issue Date** : 30-May-2023 12:49



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW147D_23051 5	0908_MW147S_23051 5	----	----	----
Sampling date / time				15-May-2023 12:35	15-May-2023 12:53	----	----	----
Compound	CAS Number	LOR	Unit	ES2317275-007 Result	ES2317275-008 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<b>0.03</b>	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.08</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.03</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<b>0.04</b>	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW147D_23051 5	0908_MW147S_23051 5	----	----	----
Sampling date / time				15-May-2023 12:35	15-May-2023 12:53	----	----	----
Compound	CAS Number	LOR	Unit	ES2317275-007	ES2317275-008	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.18</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.11</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.18</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.5</b>	<b>97.0</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>102</b>	<b>98.2</b>	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD600_230515	----	----	----	----
Sampling date / time		15-May-2023 13:12		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317275-043	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>48.4</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0007</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0239</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0009</b>	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0908_SD600_230515	----	----	----	----
Sampling date / time			15-May-2023 13:12	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2317275-043	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.0002	mg/kg	<b>0.0255</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0246</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0246</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.0002	%	<b>91.4</b>	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>88.2</b>	----	----	----	----





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW600_230515	----	----	----	----
		Sampling date / time		15-May-2023 13:09	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317275-048	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.15	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.16	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.24	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.07	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.36	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.23	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.04	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW600_230515					
		Sampling date / time	15-May-2023 13:09					
Compound	CAS Number	LOR	Unit	ES2317275-048				
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>3.37</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>2.60</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>3.14</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.7</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>98.8</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES2317275</b>	<b>Page</b>	<b>: 1 of 11</b>
<b>Client</b>	<b>: AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: MR [REDACTED]</b>	<b>Contact</b>	<b>: [REDACTED]</b>
<b>Address</b>	<b>: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>Telephone</b>	<b>: +61 02 8934 0000</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: NSW_0908_PFASOMP_23</b>	<b>Date Samples Received</b>	<b>: 23-May-2023</b>
<b>Order number</b>	<b>: 60612562_2.1</b>	<b>Date Analysis Commenced</b>	<b>: 25-May-2023</b>
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	<b>: 30-May-2023</b>
<b>Sampler</b>	<b>: [REDACTED] and [REDACTED]</b>		
<b>Site</b>	<b>: ----</b>		
<b>Quote number</b>	<b>: SY/139/19 v4 60612562_2.1</b>		
<b>No. of samples received</b>	<b>: 4</b>		
<b>No. of samples analysed</b>	<b>: 4</b>		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5076490)</b>									
ES2317277-039	Anonymous	EA055: Moisture Content	----	0.1	%	52.4	52.3	0.2	0% - 20%
ES2317415-049	Anonymous	EA055: Moisture Content	----	0.1	%	21.1	21.7	2.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0009	48.8	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808) - continued</b>									
ES2317215-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	0908_MW147D_230515	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	0908_MW147D_230515	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	0908_MW147D_230515	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	0908_MW147D_230515	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	0908_MW147D_230515	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	0908_MW147D_230515	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.9	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	123	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	83.8	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	77.0	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	86.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	80.7	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	113	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	107	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	91.5	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	78.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	89.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	119	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	122	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.7	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	111	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	128	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>					
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	77.0	67.0	137



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808) - continued</b>							
ES2317215-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	91.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.1	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	83.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	85.8	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	77.4	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	76.8	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	82.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.2	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	0908_MW147S_230515	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	0908_MW147S_230515	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132



Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>Spike Recovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	0908_MW147S_230515	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	0908_MW147S_230515	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317275	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 4
Order number	: 60612562_2.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD600_230515	15-May-2023	----	----	----	27-May-2023	29-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_230515	15-May-2023	25-May-2023	11-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_230515	15-May-2023	25-May-2023	11-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD600_230515	15-May-2023	25-May-2023	11-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_230515	15-May-2023	25-May-2023	11-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD600_230515	15-May-2023	25-May-2023	11-Nov-2023	✓	26-May-2023	04-Jul-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW147D_230515, 0908_SW600_230515	0908_MW147S_230515, 15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW147D_230515, 0908_SW600_230515	0908_MW147S_230515, 15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓





Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_230515, 0908_SW600_230515	0908_MW147S_230515,	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_230515, 0908_SW600_230515	0908_MW147S_230515,	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW147D_230515, 0908_SW600_230515	0908_MW147S_230515,	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317275**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 30-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- (30/05/2023): This is an updated SRN which indicates the amended project ID.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2317275-043	15-May-2023 13:12	0908_SD600_230515	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317275-007	15-May-2023 12:35	0908_MW147D_230515	✓
ES2317275-008	15-May-2023 12:53	0908_MW147S_230515	✓
ES2317275-048	15-May-2023 13:09	0908_SW600_230515	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317277**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 11:49

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 5

No. of samples analysed : 5



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD254_230516	0908_SD255_230516	0908_SD259_230516	0908_SD326_230516	----
Sampling date / time					16-May-2023 10:39	16-May-2023 10:31	16-May-2023 10:00	16-May-2023 10:20	----
Compound	CAS Number	LOR	Unit	ES2317277-039	ES2317277-040	ES2317277-041	ES2317277-042	-----	
				Result	Result	Result	Result	----	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>52.4</b>	<b>53.6</b>	<b>27.8</b>	<b>57.3</b>	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0016</b>	<b>0.0004</b>	<b>0.0005</b>	<b>0.0004</b>	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<b>0.0002</b>	<0.0002	<0.0002	<0.0002	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0321</b>	<b>0.0180</b>	<b>0.0068</b>	<b>0.0102</b>	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<b>0.0004</b>	<0.0002	<0.0002	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<b>0.0007</b>	<0.0002	<0.0002	<0.0002	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<b>0.0002</b>	<0.0002	<0.0002	----	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD254_230516	0908_SD255_230516	0908_SD259_230516	0908_SD326_230516	----
Sampling date / time				16-May-2023 10:39	16-May-2023 10:31	16-May-2023 10:00	16-May-2023 10:20	----	----
Compound	CAS Number	LOR	Unit	ES2317277-039	ES2317277-040	ES2317277-041	ES2317277-042	-----	----
				Result	Result	Result	Result	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0346</b>	<b>0.0190</b>	<b>0.0073</b>	<b>0.0106</b>	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0337</b>	<b>0.0184</b>	<b>0.0073</b>	<b>0.0106</b>	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0344</b>	<b>0.0184</b>	<b>0.0073</b>	<b>0.0106</b>	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>97.5</b>	<b>101</b>	<b>97.2</b>	<b>97.6</b>	----	----
13C8-PFOA	----	0.0002	%	<b>87.1</b>	<b>94.4</b>	<b>96.3</b>	<b>96.6</b>	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW259_230516	----	----	----	----
		Sampling date / time		16-May-2023 10:03	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317277-047	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.08	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.87	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.05	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.82	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.14	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW259_230516		----	----	----	----
		Sampling date / time	16-May-2023 10:03		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317277-047	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>2.12</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.69</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.98</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>108</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>100</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120



# QUALITY CONTROL REPORT

Work Order : ES2317277

Page : 1 of 11

Amendment : 1

Client : AECOM AUSTRALIA PTY LTD  
 Contact : MR [REDACTED]  
 Address : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
 Telephone : +61 02 8934 0000  
 Project : NSW\_0908\_PFASOMP\_23  
 Order number : 60612562\_2.1  
 C-O-C number : ----  
 Sampler : [REDACTED] and [REDACTED]  
 Site : ----  
 Quote number : SY/139/19 v4 60612562\_2.1  
 No. of samples received : 5  
 No. of samples analysed : 5

Laboratory : Environmental Division Sydney  
 Contact : [REDACTED]  
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
 Telephone : +61 2 8784 8555  
 Date Samples Received : 23-May-2023  
 Date Analysis Commenced : 25-May-2023  
 Issue Date : 30-May-2023



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5076490)</b>									
ES2317277-039	0908_SD254_230516	EA055: Moisture Content	----	0.1	%	52.4	52.3	0.2	0% - 20%
ES2317415-049	Anonymous	EA055: Moisture Content	----	0.1	%	21.1	21.7	2.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0009	48.8	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808) - continued</b>									
ES2317215-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.9	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	123	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	83.8	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	77.0	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	86.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	80.7	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	113	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	107	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	91.5	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	78.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	89.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	119	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	122	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.7	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	111	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	128	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>					
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	77.0	67.0	137





Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808) - continued</b>							
ES2317215-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	91.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.1	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	83.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	85.8	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	77.4	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	76.8	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	82.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.2	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132





Sub-Matrix: **WATER**

				<i>Matrix Spike (MS) Report</i>			
				<i>Spike</i>	<i>SpikeRecovery(%)</i>	<i>Acceptable Limits (%)</i>	
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>Concentration</i>	<i>MS</i>	<i>Low</i>	<i>High</i>
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317277	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 5
Order number	: 60612562_2.1	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
HDPE Soil Jar (EA055) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	----	----	----	27-May-2023	30-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD254_230516, 0908_SD259_230516,	0908_SD255_230516, 0908_SD326_230516	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW259_230516		16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317277**  
Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD** Laboratory : Environmental Division Sydney  
Contact : MR [REDACTED] Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET Address : 277-289 Woodpark Road Smithfield  
SYDNEY NSW, AUSTRALIA 2000 NSW Australia 2164

E-mail : [REDACTED] E-mail : [REDACTED]  
Telephone : +61 02 8934 0000 Telephone : +61 2 8784 8555  
Facsimile : +61 02 8934 0001 Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23 Page : 1 of 3  
Order number : 60612562\_2.1 Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
C-O-C number : ---- QC Level : NEPM 2013 B3 & ALS QC Standard  
Site : ----  
Sampler : [REDACTED] and [REDACTED]

### Dates

Date Samples Received : 23-May-2023 15:00 Issue Date : 30-May-2023  
Client Requested Due : 31-May-2023 Scheduled Reporting Date : **31-May-2023**  
Date

### Delivery Details

Mode of Delivery : Carrier Security Seal : Intact.  
No. of coolers/boxes : 2 Temperature : 5.8°C - Ice present  
Receipt Detail : No. of samples received / analysed : 5 / 5

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2317277-039	16-May-2023 10:39	0908_SD254_230516	✓	✓
ES2317277-040	16-May-2023 10:31	0908_SD255_230516	✓	✓
ES2317277-041	16-May-2023 10:00	0908_SD259_230516	✓	✓
ES2317277-042	16-May-2023 10:20	0908_SD326_230516	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317277-047	16-May-2023 10:03	0908_SW259_230516	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.





**Requested Deliverables**

**ACCOUNTS PAYABLE**

- A4 - AU Tax Invoice (INV)

Email



**DERP ESDAT REPORTS**

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQulS (ESRN\_EQUIS)

Email

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order	: ES2317280	Page	: 1 of 5
Amendment	: 2	Laboratory	: Environmental Division Sydney
Client	: AECOM AUSTRALIA PTY LTD	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 31-May-2023 17:33
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 2		
No. of samples analysed	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (31/05/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 30/05/2023 for all samples. All analysis results are as per the previous report.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_23051 6	0908_MW270D_23051 6	----	----	----
Sampling date / time				16-May-2023 11:13	16-May-2023 11:26	----	----	----
Compound	CAS Number	LOR	Unit	ES2317280-019 Result	ES2317280-022 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.04</b>	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.03</b>	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<b>0.12</b>	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.10</b>	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<b>0.05</b>	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.02</b>	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_23051 6	0908_MW270D_23051 6	----	----	----
Sampling date / time				16-May-2023 11:13	16-May-2023 11:26	----	----	----
Compound	CAS Number	LOR	Unit	ES2317280-019	ES2317280-022	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.36</b>	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.07</b>	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.36</b>	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>94.5</b>	<b>96.1</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>104</b>	<b>106</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317280**  
Amendment : **2**

Page : 1 of 7

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 2  
No. of samples analysed : 2

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 31-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES2317280

Page : 1 of 4

Amendment : 2

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023

Site : ----

Issue Date : 31-May-2023

Sampler : [REDACTED] and [REDACTED]

No. of samples received : 2

Order number : 60612562\_2.1

No. of samples analysed : 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230516,	0908_MW270D_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230516,	0908_MW270D_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230516,	0908_MW270D_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230516,	0908_MW270D_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230516,	0908_MW270D_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317280-019	16-May-2023 11:13	0908_MW270S_230516	✓
ES2317280-022	16-May-2023 11:26	0908_MW270D_230516	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

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derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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Email



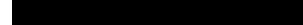
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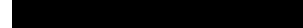
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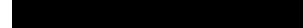
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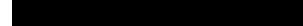
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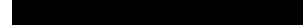
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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2317281

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317281-035	16-May-2023 12:07	0908_POT257_230516	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

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Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
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- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order : **ES2317281**

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Contact : MR [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Telephone : +61 02 8934 0000

Project : NSW\_0908\_PFASOMP\_23

Order number : 60612562\_2.1

C-O-C number : ----

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 1

No. of samples analysed : 1

Page : 1 of 5

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 2 8784 8555

Date Samples Received : 23-May-2023 15:00

Date Analysis Commenced : 25-May-2023

Issue Date : 30-May-2023 11:54



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT257\_23051  
6

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Sampling date / time

16-May-2023 12:07

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Compound	CAS Number	LOR	Unit
			Result

ES2317281-035

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.02</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.02</b>	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT257\_23051  
6

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Sampling date / time

16-May-2023 12:07

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Compound CAS Number LOR Unit

ES2317281-035

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.04	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.02	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.04	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	91.5	----	----	----	----
13C8-PFOA	----	0.02	%	104	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317281**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
 Contact : MR [REDACTED]  
 Address : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
 Telephone : +61 02 8934 0000  
 Project : NSW\_0908\_PFASOMP\_23  
 Order number : 60612562\_2.1  
 C-O-C number : ----  
 Sampler : [REDACTED] and [REDACTED]  
 Site : ----  
 Quote number : SY/139/19 v4 60612562\_2.1  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Environmental Division Sydney  
 Contact : [REDACTED]  
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
 Telephone : +61 2 8784 8555  
 Date Samples Received : 23-May-2023  
 Date Analysis Commenced : 25-May-2023  
 Issue Date : 30-May-2023



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317281	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT257_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.







## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2317282

Client : AECOM AUSTRALIA PTY LTD  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 02 8934 0000  
Facsimile : +61 02 8934 0001

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : 60612562\_2.1  
NSW\_0908\_PFASOMP\_23

Page : 1 of 2

Order number : 60612562\_2.1

Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : ----

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : ----

Sampler : [REDACTED] and [REDACTED]

### Dates

Date Samples Received : 23-May-2023 15:00  
Client Requested Due : 31-May-2023  
Date

Issue Date : 24-May-2023  
Scheduled Reporting Date : **31-May-2023**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 2  
Receipt Detail :

Security Seal : Intact.  
Temperature : 5.8°C - Ice present  
No. of samples received / analysed : 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317282-034	16-May-2023 12:55	0908_POT236_230516	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2317282</b>	Page	: 1 of 5
Amendment	: <b>1</b>	Laboratory	: Environmental Division Sydney
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 11:58
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT236\_23051  
6

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Sampling date / time

16-May-2023 12:55

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Compound	CAS Number	LOR	Unit
			Result

ES2317282-034

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908_POT236_23051 6	----	----	----	----
Sampling date / time	16-May-2023 12:55	----	----	----
Compound	CAS Number	LOR	Unit	ES2317282-034
				Result

### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<b>0.04</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.04</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.04</b>	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	<b>95.7</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>104</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2317282**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023

C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 1  
No. of samples analysed : 1



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317282	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT236_230516	16-May-2023	26-May-2023	12-Nov-2023	✔	30-May-2023	12-Nov-2023	✔





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317284**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317284-028	16-May-2023 14:25	0908_POT046_230516	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



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Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



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Email





## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2317284</b>	Page	: 1 of 5
Amendment	: <b>1</b>	Laboratory	: Environmental Division Sydney
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 11:57
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT046\_23051  
6

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Sampling date / time

16-May-2023 14:25

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Compound	CAS Number	LOR	Unit
			Result

ES2317284-028

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.06	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID						
		0908_POT046_23051 6	----	----	----	----	----	
		Sampling date / time	16-May-2023 14:25					
Compound	CAS Number	LOR	Unit	Result	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.08</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.08</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.08</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.8</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>106</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2317284**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023

C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 1  
No. of samples analysed : 1



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317284	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT046_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317285**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317285-001	17-May-2023 08:50	0908_MW104D_230517	✓
ES2317285-002	17-May-2023 08:27	0908_MW104S_230517	✓
ES2317285-010	17-May-2023 09:21	0908_MW184D_230517	✓
ES2317285-011	17-May-2023 09:32	0908_MW184S_230517	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

Email



Email



Email



Email



Email



Email



Email



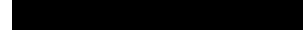
Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQuIS (ESRN\_EQUIS)

Email



Email



Email



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## CERTIFICATE OF ANALYSIS

Work Order	: ES2317285	Page	: 1 of 5
Amendment	: 1	Laboratory	: Environmental Division Sydney
Client	: AECOM AUSTRALIA PTY LTD	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 11:59
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 4		
No. of samples analysed	: 4		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW104D_23051 7	0908_MW104S_23051 7	0908_MW184D_23051 7	0908_MW184S_23051 7	----
Sampling date / time				17-May-2023 08:50	17-May-2023 08:27	17-May-2023 09:21	17-May-2023 09:32	----
Compound	CAS Number	LOR	Unit	ES2317285-001 Result	ES2317285-002 Result	ES2317285-010 Result	ES2317285-011 Result	----- ----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.28	0.06	0.10	0.06	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.43	0.09	0.14	0.07	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	4.96	0.92	1.60	1.10	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.88	0.04	0.16	0.11	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	37.3	2.25	4.43	8.82	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	0.03	<0.02	<0.02	<0.02	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.2	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.24	0.04	0.06	0.04	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.22	0.16	0.34	0.13	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.16	<0.02	0.05	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.56	0.04	0.15	0.08	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW104D_23051 7	0908_MW104S_23051 7	0908_MW184D_23051 7	0908_MW184S_23051 7	----
Sampling date / time				17-May-2023 08:50	17-May-2023 08:27	17-May-2023 09:21	17-May-2023 09:32	----
Compound	CAS Number	LOR	Unit	ES2317285-001 Result	ES2317285-002 Result	ES2317285-010 Result	ES2317285-011 Result	----- ----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>46.3</b>	<b>3.60</b>	<b>7.03</b>	<b>10.4</b>	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>42.3</b>	<b>3.17</b>	<b>6.03</b>	<b>9.92</b>	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>44.9</b>	<b>3.47</b>	<b>6.73</b>	<b>10.2</b>	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>96.4</b>	<b>109</b>	<b>105</b>	<b>94.8</b>	----
13C8-PFOA	----	0.02	%	<b>103</b>	<b>106</b>	<b>104</b>	<b>105</b>	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317285**  
Amendment : **1**

Page : 1 of 7

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 4  
No. of samples analysed : 4

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	0908_MW104S_230517	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	0908_MW104S_230517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	0908_MW104S_230517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	0908_MW104S_230517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	0908_MW104S_230517	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317285	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 4
Order number	: 60612562_2.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW104D_230517, 0908_MW184D_230517,	0908_MW104S_230517, 0908_MW184S_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW104D_230517, 0908_MW184D_230517,	0908_MW104S_230517, 0908_MW184S_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW104D_230517, 0908_MW184D_230517,	0908_MW104S_230517, 0908_MW184S_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW104D_230517, 0908_MW184D_230517,	0908_MW104S_230517, 0908_MW184S_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW104D_230517, 0908_MW184D_230517,	0908_MW104S_230517, 0908_MW184S_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.







## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317355**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317355-033	17-May-2023 10:25	0908_POT144_230517	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2317355</b>	Page	: 1 of 5
Amendment	: <b>1</b>	Laboratory	: Environmental Division Sydney
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 12:03
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT144\_23051  
7

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Sampling date / time

17-May-2023 10:25

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Compound	CAS Number	LOR	Unit
			Result

ES2317355-033

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT144\_23051  
7

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Sampling date / time

17-May-2023 10:25

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Compound	CAS Number	LOR	Unit
			Result

ES2317355-033

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	92.3	----	----	----	----
13C8-PFOA	----	0.02	%	100	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120





# QUALITY CONTROL REPORT

Work Order : **ES2317355**  
Amendment : **1**

Page : 1 of 7

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 1  
No. of samples analysed : 1

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.92	0.90	2.8	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.25	2.06	9.1	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5072963) - continued</b>									
ES2317285-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	0.16	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5072963) - continued</b>									
ES2317275-007	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317285-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5072963)</b>									
ES2317275-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317285-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	3.60	3.40	5.7	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.3	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	88.1	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	82.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	73.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	92.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	127	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	93.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	116	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	106	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	106	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	76.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.5	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	78.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	121	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	72.3	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	76.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5072963) - continued</b>							
ES2317275-008	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	108	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	125	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5072963)</b>							
ES2317275-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	90.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	90.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	135	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317355	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.





## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT144_230517	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317358**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317358-005	15-May-2023 15:15	0908_MW139_230515	✓
ES2317358-032	15-May-2023 15:25	0908_POT107_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317358**

Page : 1 of 5

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:04

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW139_230515	0908_POT107_23051 5	----	----	----
Sampling date / time				15-May-2023 15:15	15-May-2023 15:25	----	----	----
Compound	CAS Number	LOR	Unit	ES2317358-005	ES2317358-032	-----	-----	-----
				Result	Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.02</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.03</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<b>0.01</b>	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

				Sample ID	0908_MW139_230515	0908_POT107_23051 5	----	----	----
				Sampling date / time	15-May-2023 15:15	15-May-2023 15:25	----	----	----
Compound	CAS Number	LOR	Unit	ES2317358-005	ES2317358-032	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.06</b>	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.05</b>	----	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.06</b>	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>104</b>	<b>91.5</b>	----	----	----	
13C8-PFOA	----	0.02	%	<b>105</b>	<b>103</b>	----	----	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317358**  
Amendment : **1**

Page : 1 of 7

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 2  
No. of samples analysed : 2

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	0908_MW139_230515	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	0908_MW139_230515	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	0908_MW139_230515	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	0908_MW139_230515	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	0908_MW139_230515	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	0908_MW139_230515	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	0908_POT107_230515	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	0908_POT107_230515	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	0908_POT107_230515	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	0908_POT107_230515	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	0908_POT107_230515	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317358	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_230515,	0908_POT107_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_230515,	0908_POT107_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_230515,	0908_POT107_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_230515,	0908_POT107_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW139_230515,	0908_POT107_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317361**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317361-029	15-May-2023 14:38	0908_POT085_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317361**

Page : 1 of 5

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:05

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 1

No. of samples analysed : 1



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_23051  
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Sampling date / time

15-May-2023 14:38

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Compound	CAS Number	LOR	Unit
			Result

ES2317361-029

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_POT085\_23051  
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Sampling date / time

15-May-2023 14:38

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Compound CAS Number LOR Unit

ES2317361-029

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	97.3	----	----	----	----
13C8-PFOA	----	0.02	%	103	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317361**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
 Contact : MR [REDACTED]  
 Address : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
 Telephone : +61 02 8934 0000  
 Project : NSW\_0908\_PFASOMP\_23  
 Order number : 60612562\_2.1  
 C-O-C number : ----  
 Sampler : [REDACTED] and [REDACTED]  
 Site : ----  
 Quote number : SY/139/19 v4 60612562\_2.1  
 No. of samples received : 1  
 No. of samples analysed : 1

Laboratory : Environmental Division Sydney  
 Contact : [REDACTED]  
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
 Telephone : +61 2 8784 8555  
 Date Samples Received : 23-May-2023  
 Date Analysis Commenced : 25-May-2023  
 Issue Date : 30-May-2023



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317361	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_POT085_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317369**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317369-012	15-May-2023 13:30	0908_MW230S_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order	: ES2317369	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023 15:00
Order number	: 60612562_2.1	Date Analysis Commenced	: 25-May-2023
C-O-C number	: ----	Issue Date	: 30-May-2023 12:36
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_23051  
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Sampling date / time

15-May-2023 13:30

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Compound	CAS Number	LOR	Unit
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ES2317369-012

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Result

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### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_23051  
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Sampling date / time

15-May-2023 13:30

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Compound CAS Number LOR Unit

ES2317369-012

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	98.0	----	----	----	----
13C8-PFOA	----	0.02	%	103	----	----	----	----





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2317369**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023

C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 1  
No. of samples analysed : 1



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317369	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317408**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317408-020	15-May-2023 11:09	0908_MW271S_230515	✓
ES2317408-021	15-May-2023 10:53	0908_MW271D_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317408**

Page : 1 of 5

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:38

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_23051 5	0908_MW271D_23051 5	----	----	----
Sampling date / time				15-May-2023 11:09	15-May-2023 10:53	----	----	----
Compound	CAS Number	LOR	Unit	ES2317408-020 Result	ES2317408-021 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271S_23051 5	0908_MW271D_23051 5	----	----	----
Sampling date / time				15-May-2023 11:09	15-May-2023 10:53	----	----	----
Compound	CAS Number	LOR	Unit	ES2317408-020	ES2317408-021	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.05</b>	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.02</b>	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.05</b>	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>105</b>	<b>96.4</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>104</b>	<b>100.0</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317408**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
 Contact : MR [REDACTED]  
 Address : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
 Telephone : +61 02 8934 0000  
 Project : NSW\_0908\_PFASOMP\_23  
 Order number : 60612562\_2.1  
 C-O-C number : ----  
 Sampler : [REDACTED] and [REDACTED]  
 Site : ----  
 Quote number : SY/139/19 v4 60612562\_2.1  
 No. of samples received : 2  
 No. of samples analysed : 2

Laboratory : Environmental Division Sydney  
 Contact : [REDACTED]  
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
 Telephone : +61 2 8784 8555  
 Date Samples Received : 23-May-2023  
 Date Analysis Commenced : 25-May-2023  
 Issue Date : 30-May-2023



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317408	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_230515,	0908_MW271D_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_230515,	0908_MW271D_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_230515,	0908_MW271D_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_230515,	0908_MW271D_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW271S_230515,	0908_MW271D_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.







## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2317410

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317410-017	15-May-2023 11:51	0908_MW238D_230515	✓
ES2317410-018	15-May-2023 11:49	0908_MW238S_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317410**

Page : 1 of 5

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:39

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_23051 5	0908_MW238S_23051 5	----	----	----
Sampling date / time				15-May-2023 11:51	15-May-2023 11:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2317410-017 Result	ES2317410-018 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_23051 5	0908_MW238S_23051 5	----	----	----
Sampling date / time				15-May-2023 11:51	15-May-2023 11:49	----	----	----
Compound	CAS Number	LOR	Unit	ES2317410-017	ES2317410-018	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.0</b>	<b>101</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>104</b>	<b>104</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317410**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023

C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]

Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2  
No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317410	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_230515,	0908_MW238S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_230515,	0908_MW238S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_230515,	0908_MW238S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_230515,	0908_MW238S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_230515,	0908_MW238S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317411**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317411-015	15-May-2023 10:10	0908_MW236D_230515	✓
ES2317411-016	15-May-2023 10:03	0908_MW236S_230515	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



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## CERTIFICATE OF ANALYSIS

Work Order	: ES2317411	Page	: 1 of 5
Amendment	: 1	Laboratory	: Environmental Division Sydney
Client	: AECOM AUSTRALIA PTY LTD	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 12:40
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 2		
No. of samples analysed	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236D_23051 5	0908_MW236S_23051 5	----	----	----
Sampling date / time				15-May-2023 10:10	15-May-2023 10:03	----	----	----
Compound	CAS Number	LOR	Unit	ES2317411-015 Result	ES2317411-016 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

				Sample ID	0908_MW236D_23051	0908_MW236S_23051			
					5	5	----	----	----
				Sampling date / time	15-May-2023 10:10	15-May-2023 10:03	----	----	----
Compound	CAS Number	LOR	Unit	ES2317411-015	ES2317411-016	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>98.4</b>	<b>82.9</b>	----	----	----	
13C8-PFOA	----	0.02	%	<b>102</b>	<b>104</b>	----	----	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2317411**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 2  
No. of samples analysed : 2

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317411	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_230515,	0908_MW236S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_230515,	0908_MW236S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_230515,	0908_MW236S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_230515,	0908_MW236S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_230515,	0908_MW236S_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2317412

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317412-013	17-May-2023 12:53	0908_MW231D_230517	✓
ES2317412-014	17-May-2023 12:42	0908_MW231S_230517	✓
ES2317412-036	17-May-2023 13:44	0908_POT382_230517	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2317412</b>	Page	: 1 of 5
Amendment	: <b>1</b>	Laboratory	: Environmental Division Sydney
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Contact	: [REDACTED]
Contact	: MR [REDACTED]	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Telephone	: +61 2 8784 8555
Telephone	: +61 02 8934 0000	Date Samples Received	: 23-May-2023 15:00
Project	: NSW_0908_PFASOMP_23	Date Analysis Commenced	: 25-May-2023
Order number	: 60612562_2.1	Issue Date	: 30-May-2023 12:42
C-O-C number	: ----		
Sampler	: [REDACTED] and [REDACTED]		
Site	: ----		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 3		
No. of samples analysed	: 3		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_23051 7	0908_MW231S_23051 7	0908_POT382_23051 7	----	----
Sampling date / time				17-May-2023 12:53	17-May-2023 12:42	17-May-2023 13:44	----	----
Compound	CAS Number	LOR	Unit	ES2317412-013 Result	ES2317412-014 Result	ES2317412-036 Result	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.02</b>	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

				Sample ID	0908_MW231D_23051	0908_MW231S_23051	0908_POT382_23051	----	----
				Sampling date / time	17-May-2023 12:53	17-May-2023 12:42	17-May-2023 13:44	----	----
Compound	CAS Number	LOR	Unit	ES2317412-013	ES2317412-014	ES2317412-036	-----	-----	
				Result	Result	Result	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<b>0.04</b>	<0.01	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>0.04</b>	<0.01	----	----	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>0.04</b>	<0.01	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>102</b>	<b>97.6</b>	<b>98.0</b>	----	----	
13C8-PFOA	----	0.02	%	<b>98.2</b>	<b>97.4</b>	<b>104</b>	----	----	



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2317412**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 3  
No. of samples analysed : 3

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	0908_MW231D_230517	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317412-013	0908_MW231D_230517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	0908_MW231D_230517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	0908_MW231D_230517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	0908_MW231D_230517	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317412	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 3
Order number	: 60612562_2.1	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_230517, 0908_POT382_230517	0908_MW231S_230517,	17-May-2023	26-May-2023	13-Nov-2023	✔	30-May-2023	13-Nov-2023	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_230517, 0908_POT382_230517	0908_MW231S_230517,	17-May-2023	26-May-2023	13-Nov-2023	✔	30-May-2023	13-Nov-2023	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_230517, 0908_POT382_230517	0908_MW231S_230517,	17-May-2023	26-May-2023	13-Nov-2023	✔	30-May-2023	13-Nov-2023	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_230517, 0908_POT382_230517	0908_MW231S_230517,	17-May-2023	26-May-2023	13-Nov-2023	✔	30-May-2023	13-Nov-2023	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_230517, 0908_POT382_230517	0908_MW231S_230517,	17-May-2023	26-May-2023	13-Nov-2023	✔	30-May-2023	13-Nov-2023	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.







## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317413**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2317413-037	17-May-2023 11:48	0908_SD019_230517	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317413-030	17-May-2023 11:06	0908_POT087_230517	✓
ES2317413-031	17-May-2023 11:16	0908_POT089_230517	✓
ES2317413-045	17-May-2023 11:42	0908_SW019_230517	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317413**

Page : 1 of 9

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:43

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 4

No. of samples analysed : 4



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_POT087_23051 7	0908_POT089_23051 7	----	----	----
Sampling date / time				17-May-2023 11:06	17-May-2023 11:16	----	----	----
Compound	CAS Number	LOR	Unit	ES2317413-030 Result	ES2317413-031 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.04	0.28	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.17	0.23	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.04	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_POT087_23051 7	0908_POT089_23051 7	----	----	----
Sampling date / time				17-May-2023 11:06	17-May-2023 11:16	----	----	----
Compound	CAS Number	LOR	Unit	ES2317413-030	ES2317413-031	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.21</b>	<b>0.60</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.21</b>	<b>0.51</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.21</b>	<b>0.58</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>99.1</b>	<b>90.2</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>102</b>	<b>104</b>	----	----	----





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD019_230517	----	----	----	----
Sampling date / time		17-May-2023 11:48		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317413-037	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>64.2</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0007</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD019_230517	----	----	----	----
Sampling date / time				17-May-2023 11:48	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2317413-037	-----	-----	-----	-----	
				Result	---	---	---	---	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0007</b>	----	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0007</b>	----	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0007</b>	----	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>96.2</b>	----	----	----	----	
13C8-PFOA	----	0.0002	%	<b>98.0</b>	----	----	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW019_230517	----	----	----	----
		Sampling date / time		17-May-2023 11:42	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317413-045	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.11</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.07</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW019_230517		----	----	----	----
		Sampling date / time	17-May-2023 11:42		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317413-045	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.18</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.18</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.18</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>93.1</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>103</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317413**

Page : 1 of 11

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023

C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 4  
No. of samples analysed : 4



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5076490)</b>									
ES2317277-039	Anonymous	EA055: Moisture Content	----	0.1	%	52.4	52.3	0.2	0% - 20%
ES2317415-049	Anonymous	EA055: Moisture Content	----	0.1	%	21.1	21.7	2.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0009	48.8	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808) - continued</b>									
ES2317215-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350) - continued</b>									
ES2317358-005	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.9	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	123	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	83.8	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	77.0	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	86.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	80.7	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	113	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	107	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	91.5	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	78.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	89.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	119	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	122	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.7	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	111	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	128	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>					
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	77.0	67.0	137



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808) - continued</b>							
ES2317215-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	91.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.1	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	83.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	85.8	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	77.4	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	76.8	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	82.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.2	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317413	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 4
Order number	: 60612562_2.1	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD019_230517	17-May-2023	----	----	----	27-May-2023	31-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_230517	17-May-2023	25-May-2023	13-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_230517	17-May-2023	25-May-2023	13-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD019_230517	17-May-2023	25-May-2023	13-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_230517	17-May-2023	25-May-2023	13-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD019_230517	17-May-2023	25-May-2023	13-Nov-2023	✓	26-May-2023	04-Jul-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT087_230517, 0908_SW019_230517	0908_POT089_230517, 17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_POT087_230517, 0908_SW019_230517	0908_POT089_230517, 17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_230517, 0908_SW019_230517	0908_POT089_230517,	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_230517, 0908_SW019_230517	0908_POT089_230517,	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_POT087_230517, 0908_SW019_230517	0908_POT089_230517,	17-May-2023	26-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	14	14.29	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	18.18	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317414**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: +61 02 8934 0000	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 8934 0001	Facsimile	: +61-2-8784 8500
Project	: 60612562_2.1 NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [REDACTED] and [REDACTED]		

### Dates

Date Samples Received	: 23-May-2023 15:00	Issue Date	: 24-May-2023
Client Requested Due Date	: 31-May-2023	Scheduled Reporting Date	: <b>31-May-2023</b>

### Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 2	Temperature	: 5.8°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317414-051	18-May-2023 10:05	0908_QC120_230518	✓
ES2317414-052	15-May-2023 16:04	0908_QC305_230515	✓
ES2317414-053	16-May-2023 16:27	0908_QC306_230516	✓
ES2317414-054	17-May-2023 16:44	0908_QC307_230517	✓
ES2317414-055	18-May-2023 16:48	0908_QC308_230518	✓
ES2317414-056	19-May-2023 12:56	0908_QC309_230519	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



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# CERTIFICATE OF ANALYSIS

Work Order : **ES2317414**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:45

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 6

No. of samples analysed : 6



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_QC120_230518	----	----	----	----
Sampling date / time		18-May-2023 10:05		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317414-051	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.20	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.08	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID	0908_QC120_230518					
		Sampling date / time	18-May-2023 10:05					
Compound	CAS Number	LOR	Unit	ES2317414-051	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.37</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.20</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.33</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>100</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>101</b>	----	----	----	----





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC305_230515	0908_QC306_230516	0908_QC307_230517	0908_QC308_230518	0908_QC309_230519
Sampling date / time					15-May-2023 16:04	16-May-2023 16:27	17-May-2023 16:44	18-May-2023 16:48	19-May-2023 12:56
Compound	CAS Number	LOR	Unit	ES2317414-052	ES2317414-053	ES2317414-054	ES2317414-055	ES2317414-056	ES2317414-056
				Result	Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	96.5	99.0	104	105	110	110
13C8-PFOA	----	0.02	%	103	102	101	103	106	106



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2317414**

Page : 1 of 11

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
 Contact : MR [REDACTED]  
 Address : LEVEL 21 420 GEORGE STREET  
 SYDNEY NSW, AUSTRALIA 2000  
 Telephone : +61 02 8934 0000  
 Project : NSW\_0908\_PFASOMP\_23  
 Order number : 60612562\_2.1  
 C-O-C number : ----  
 Sampler : [REDACTED] and [REDACTED]  
 Site : ----  
 Quote number : SY/139/19 v4 60612562\_2.1  
 No. of samples received : 6  
 No. of samples analysed : 6

Laboratory : Environmental Division Sydney  
 Contact : [REDACTED]  
 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
 Telephone : +61 2 8784 8555  
 Date Samples Received : 23-May-2023  
 Date Analysis Commenced : 25-May-2023  
 Issue Date : 30-May-2023



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5075460)</b>									
ES2317414-055	0908_QC308_230518	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317415-009	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.15	0.14	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5075460) - continued</b>									
ES2317415-009	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5075460)</b>									
ES2317414-055	0908_QC308_230518	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317415-009	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5075460) - continued</b>									
ES2317415-009	Anonymous	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5075460)</b>									
ES2317414-055	0908_QC308_230518	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5075460) - continued</b>									
ES2317414-055	0908_QC308_230518	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317415-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317412-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5075460)</b>									
ES2317414-055	0908_QC308_230518	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5075460) - continued</b>									
ES2317414-055	0908_QC308_230518	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317415-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5073350)</b>									
ES2317358-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317412-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5075460)</b>									
ES2317414-055	0908_QC308_230518	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317415-009	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.35	0.34	2.9	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	79.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	120	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.9	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5075460)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	115	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	88.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	79.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	77.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	72.5	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5075460)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.6	72.0	130



Sub-Matrix: WATER

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit					LCS	Low
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5075460) - continued</b>									
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.3	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.7	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	74.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTEDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	79.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	79.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	94.4	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	78.7	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.9	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5075460)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	76.5	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.7	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.8	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.6	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	124	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.5	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.2	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144	





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5075460)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	85.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	111	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	98.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	75.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	91.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	88.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	96.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	112	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	87.0	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5075460)</b>							
ES2317414-056	0908_QC309_230519	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	93.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	107	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.9	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	116	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	83.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	125	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	95.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	72.4	71.0	132





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5075460)</b>							
ES2317414-056	0908_QC309_230519	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	89.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	80.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.3	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.1	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	92.9	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	74.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	73.9	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	84.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	75.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	101	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	76.6	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	117	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5075460)</b>							
ES2317414-056	0908_QC309_230519	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	77.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	76.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	114	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350)</b>							
ES2317358-032	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.1	63.0	143



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5073350) - continued</b>							
ES2317358-032	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	106	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5075460)</b>							
ES2317414-056	0908_QC309_230519	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	91.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	74.6	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317414	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 6
Order number	: 60612562_2.1	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC305_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC306_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC307_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC120_230518	18-May-2023	26-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC308_230518	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC309_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC305_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC306_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC307_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC120_230518	18-May-2023	26-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC308_230518	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC309_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_QC305_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC306_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC307_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC120_230518	18-May-2023	26-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC308_230518	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC309_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC305_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC306_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC307_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC120_230518	18-May-2023	26-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC308_230518	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC309_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_QC305_230515	15-May-2023	26-May-2023	11-Nov-2023	✓	30-May-2023	11-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC306_230516	16-May-2023	26-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC307_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC120_230518	18-May-2023	26-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC308_230518	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_QC309_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.







## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317415**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 02 8934 0000  
Facsimile : +61 02 8934 0001

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : 60612562\_2.1  
NSW\_0908\_PFASOMP\_23

Page : 1 of 3

Order number : 60612562\_2.1

Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : ----

QC Level : NEPM 2013 B3 & ALS QC Standard

Site : ----

Sampler : [REDACTED] and [REDACTED]

### Dates

Date Samples Received : 23-May-2023 15:00  
Client Requested Due : 31-May-2023  
Date

Issue Date : 24-May-2023  
Scheduled Reporting Date : **31-May-2023**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 2  
Receipt Detail :

Security Seal : Intact.  
Temperature : 5.8°C - Ice present  
No. of samples received / analysed : 14 / 14

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2317415-038	16-May-2023 13:25	0908_SD059_230516	✓	✓
ES2317415-044	16-May-2023 13:35	0908_SS108_230516	✓	✓
ES2317415-049	16-May-2023 13:25	0908_QC116_230516	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317415-003	19-May-2023 08:22	0908_MW122_230519	✓
ES2317415-004	18-May-2023 15:04	0908_MW137_230518	✓
ES2317415-006	18-May-2023 14:44	0908_MW140_230518	✓
ES2317415-009	17-May-2023 15:02	0908_MW178_230517	✓
ES2317415-023	18-May-2023 09:05	0908_MW280S_230518	✓
ES2317415-024	18-May-2023 10:05	0908_MW315D_230518	✓
ES2317415-025	18-May-2023 09:45	0908_MW315S_230518	✓
ES2317415-026	18-May-2023 13:25	0908_MW842_230518	✓
ES2317415-027	18-May-2023 13:00	0908_MW844_230518	✓
ES2317415-046	16-May-2023 13:20	0908_SW059_230516	✓
ES2317415-050	17-May-2023 15:02	0908_QC118_230517	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQulS (ESRN\_EQUIS)

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## CERTIFICATE OF ANALYSIS

Work Order : **ES2317415**

Page : 1 of 13

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : MR [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61 02 8934 0000

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 23-May-2023 15:00

Order number : 60612562\_2.1

Date Analysis Commenced : 25-May-2023

C-O-C number : ----

Issue Date : 30-May-2023 12:47

Sampler : [REDACTED] and [REDACTED]

Site : ----

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 14

No. of samples analysed : 14



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (30/05/2023): This report has been amended to alter the project reference code. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW122_230519	0908_MW137_230518	0908_MW140_230518	0908_MW178_230517	0908_MW280S_230518
Sampling date / time				19-May-2023 08:22	18-May-2023 15:04	18-May-2023 14:44	17-May-2023 15:02	18-May-2023 09:05
Compound	CAS Number	LOR	Unit	ES2317415-003	ES2317415-004	ES2317415-006	ES2317415-009	ES2317415-023
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.05	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	<0.01	<0.01	0.15	0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.08	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW122_230519	0908_MW137_230518	0908_MW140_230518	0908_MW178_230517	0908_MW280S_230518
Sampling date / time				19-May-2023 08:22	18-May-2023 15:04	18-May-2023 14:44	17-May-2023 15:02	18-May-2023 09:05
Compound	CAS Number	LOR	Unit	ES2317415-003	ES2317415-004	ES2317415-006	ES2317415-009	ES2317415-023
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.02</b>	<0.01	<0.01	<b>0.35</b>	<b>0.01</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.02</b>	<0.01	<0.01	<b>0.23</b>	<b>0.01</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.02</b>	<0.01	<0.01	<b>0.32</b>	<b>0.01</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>108</b>	<b>112</b>	<b>104</b>	<b>110</b>	<b>107</b>
13C8-PFOA	----	0.02	%	<b>102</b>	<b>99.6</b>	<b>100</b>	<b>105</b>	<b>103</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW315D_23051 8	0908_MW315S_23051 8	0908_MW842_230518	0908_MW844_230518	0908_QC118_230517
Sampling date / time				18-May-2023 10:05	18-May-2023 09:45	18-May-2023 13:25	18-May-2023 13:00	17-May-2023 15:02
Compound	CAS Number	LOR	Unit	ES2317415-024	ES2317415-025	ES2317415-026	ES2317415-027	ES2317415-050
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	<0.02	<0.02	<0.02	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	<0.02	<0.02	<0.02	0.04
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.16	0.01	<0.01	<0.01	0.18
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	0.10
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	<0.02	<0.02	<0.02	0.06
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW315D_23051 8	0908_MW315S_23051 8	0908_MW842_230518	0908_MW844_230518	0908_QC118_230517
Sampling date / time				18-May-2023 10:05	18-May-2023 09:45	18-May-2023 13:25	18-May-2023 13:00	17-May-2023 15:02
Compound	CAS Number	LOR	Unit	ES2317415-024	ES2317415-025	ES2317415-026	ES2317415-027	ES2317415-050
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.30</b>	<b>0.01</b>	<0.01	<0.01	<b>0.44</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.16</b>	<b>0.01</b>	<0.01	<0.01	<b>0.28</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.27</b>	<b>0.01</b>	<0.01	<0.01	<b>0.40</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>117</b>	<b>108</b>	<b>117</b>	<b>116</b>	<b>115</b>
13C8-PFOA	----	0.02	%	<b>105</b>	<b>99.2</b>	<b>103</b>	<b>101</b>	<b>107</b>



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0908_SD059_230516	0908_QC116_230516	----	----	----
Sampling date / time			16-May-2023 13:25	16-May-2023 13:25	----	----	----	
Compound	CAS Number	LOR	Unit	ES2317415-038	ES2317415-049	-----	-----	-----
				Result	Result	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>22.8</b>	<b>21.1</b>	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<b>0.0004</b>	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<b>0.0005</b>	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD059_230516	0908_QC116_230516	----	----	----
Sampling date / time				16-May-2023 13:25	16-May-2023 13:25	----	----	----	
Compound	CAS Number	LOR	Unit	ES2317415-038	ES2317415-049	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<b>0.0009</b>	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<b>0.0009</b>	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<b>0.0009</b>	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>117</b>	<b>96.8</b>	----	----	----	
13C8-PFOA	----	0.0002	%	<b>102</b>	<b>100.0</b>	----	----	----	



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		0908_SS108_230516	----	----	----	----
Sampling date / time		16-May-2023 13:35		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317415-044	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>3.4</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0025</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0002</b>	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	0908_SS108_230516	----	----	----	----
Sampling date / time				16-May-2023 13:35	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES2317415-044	-----	-----	-----	-----	
				Result	---	---	---	---	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0027</b>	----	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0025</b>	----	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0025</b>	----	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>101</b>	----	----	----	----	
13C8-PFOA	----	0.0002	%	<b>102</b>	----	----	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW059_230516	----	----	----	----
		Sampling date / time		16-May-2023 13:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317415-046	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.25	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.25	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.35	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.15	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	2.14	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.46	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.06	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.13	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW059_230516		----	----	----	----
		Sampling date / time	16-May-2023 13:20		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2317415-046	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>5.88</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>4.49</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>5.48</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>109</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>99.2</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SURFACE WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120





# QUALITY CONTROL REPORT

Work Order : **ES2317415**  
Amendment : **1**

Page : 1 of 11

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : MR [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000  
Telephone : +61 02 8934 0000  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : ----  
Sampler : [REDACTED] and [REDACTED]  
Site : ----  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 14  
No. of samples analysed : 14

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 23-May-2023  
Date Analysis Commenced : 25-May-2023  
Issue Date : 30-May-2023



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW
[REDACTED]	Analyst	Sydney Inorganics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5076490)</b>									
ES2317277-039	Anonymous	EA055: Moisture Content	----	0.1	%	52.4	52.3	0.2	0% - 20%
ES2317415-049	0908_QC116_230516	EA055: Moisture Content	----	0.1	%	21.1	21.7	2.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2317415-049	0908_QC116_230516	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0009	48.8	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5070808) - continued</b>									
ES2317215-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2317415-049	0908_QC116_230516	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	0908_QC116_230516	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5070808)</b>									
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2317415-049	0908_QC116_230516	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5075460)</b>									
ES2317414-055	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2317415-009	0908_MW178_230517	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.15	0.14	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5075460)</b>									
ES2317414-055	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5075460) - continued</b>									
ES2317414-055	Anonymous	EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2317415-009	0908_MW178_230517	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5075460)</b>									
ES2317414-055	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317415-009	0908_MW178_230517	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5075460)</b>									
ES2317414-055	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2317415-009	0908_MW178_230517	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5075460)</b>									
ES2317414-055	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2317415-009	0908_MW178_230517	EP231X: Sum of PFAS	----	0.01	µg/L	0.35	0.34	2.9	0% - 20%



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	74.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	82.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.3	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.9	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	123	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.5	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>								





Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	82.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	89.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	88.8	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	83.8	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5075460)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	79.7	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.7	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.3	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	115	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5075460)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.0	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.3	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	83.6	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.3	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.7	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	74.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	79.2	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5075460)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	82.0	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	76.5	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.7	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.8	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.6	57.6	145	





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5075460) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	123	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	124	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5075460)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	85.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	111	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	98.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	75.4	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	77.0	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	86.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	80.7	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	113	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	107	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	88.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	91.5	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	78.2	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	89.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	119	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	122	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	99.7	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	111	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	128	69.0	133
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808)</b>					
ES2317215-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	77.0	67.0	137



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5070808) - continued</b>							
ES2317215-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	91.4	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.1	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	83.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	85.8	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	77.4	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	76.8	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5070808)</b>							
ES2317215-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	82.7	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	87.2	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	86.0	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5075460)</b>							
ES2317414-056	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	79.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	93.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	107	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.9	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	116	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5075460)</b>							
ES2317414-056	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	89.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	80.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.3	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	80.1	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	92.9	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	74.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	73.9	71.0	132



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5075460)</b>							
ES2317414-056	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	77.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	76.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	78.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	82.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	107	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	114	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5075460)</b>							
ES2317414-056	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	91.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	74.6	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317415	Page	: 1 of 6
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 23-May-2023
Site	: ----	Issue Date	: 30-May-2023
Sampler	: [REDACTED] and [REDACTED]	No. of samples received	: 14
Order number	: 60612562_2.1	No. of samples analysed	: 14

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
HDPE Soil Jar (EA055) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	----	----	----	27-May-2023	30-May-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD059_230516, 0908_QC116_230516	0908_SS108_230516,	16-May-2023	25-May-2023	12-Nov-2023	✓	26-May-2023	04-Jul-2023	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW059_230516	16-May-2023	29-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW178_230517, 0908_QC118_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW137_230518, 0908_MW280S_230518, 0908_MW315S_230518, 0908_MW844_230518	0908_MW140_230518, 0908_MW315D_230518, 0908_MW842_230518,	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_MW122_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW059_230516	16-May-2023	29-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW178_230517, 0908_QC118_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW137_230518, 0908_MW280S_230518, 0908_MW315S_230518, 0908_MW844_230518	0908_MW140_230518, 0908_MW315D_230518, 0908_MW842_230518,	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_MW122_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_SW059_230516	16-May-2023	29-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW178_230517, 0908_QC118_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW137_230518, 0908_MW280S_230518, 0908_MW315S_230518, 0908_MW844_230518	0908_MW140_230518, 0908_MW315D_230518, 0908_MW842_230518,	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_MW122_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW059_230516	16-May-2023	29-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW178_230517, 0908_QC118_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW137_230518, 0908_MW280S_230518, 0908_MW315S_230518, 0908_MW844_230518	0908_MW140_230518, 0908_MW315D_230518, 0908_MW842_230518,	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_MW122_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓	
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_SW059_230516	16-May-2023	29-May-2023	12-Nov-2023	✓	30-May-2023	12-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW178_230517, 0908_QC118_230517	17-May-2023	29-May-2023	13-Nov-2023	✓	30-May-2023	13-Nov-2023	✓	
HDPE (no PTFE) (EP231X) 0908_MW137_230518, 0908_MW280S_230518, 0908_MW315S_230518, 0908_MW844_230518	0908_MW140_230518, 0908_MW315D_230518, 0908_MW842_230518,	18-May-2023	29-May-2023	14-Nov-2023	✓	30-May-2023	14-Nov-2023	✓
HDPE (no PTFE) (EP231X) 0908_MW122_230519	19-May-2023	29-May-2023	15-Nov-2023	✓	30-May-2023	15-Nov-2023	✓	



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard





## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2317703</b>	Page	: 1 of 5
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 73 HUNTER REGION MC HRMC NSW, AUSTRALIA 2310	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 26-May-2023 13:00
Order number	: 60612562_2.1	Date Analysis Commenced	: 29-May-2023
C-O-C number	: 52558	Issue Date	: 02-Jun-2023 12:08
Sampler	: [REDACTED] [REDACTED]		
Site	: WLM		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW109D\_23052  
6

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Sampling date / time

26-May-2023 11:45

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Compound	CAS Number	LOR	Unit	Result	----	----	----	----
				ES2317703-001	-----	-----	-----	-----
				Result	----	----	----	----

### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.07	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.66	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	3.82	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.06	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.14	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908_MW109D_23052 6	----	----	----	----
Sampling date / time	26-May-2023 11:45	----	----	----
Compound	CAS Number	LOR	Unit	ES2317703-001
				Result

### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<b>4.90</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>4.48</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>4.81</b>	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	<b>106</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>101</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: <b>ES2317703</b>	Page	: 1 of 7
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 73 HUNTER REGION MC HRMC NSW, AUSTRALIA 2310	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 26-May-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 29-May-2023
C-O-C number	: 52558	Issue Date	: 02-Jun-2023
Sampler	: [REDACTED] [REDACTED]		
Site	: WLM		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5084041)</b>									
ES2317677-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP2306646-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5084041)</b>									
ES2317677-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5084041) - continued</b>									
EP2306646-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5084041)</b>									
ES2317677-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2306646-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5084041)</b>									
ES2317677-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5084041) - continued</b>									
ES2317677-001	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP2306646-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5084041)</b>									
ES2317677-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP2306646-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5084041)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	99.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5084041)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	82.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.7	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5084041)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	108	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	81.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	84.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	92.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.8	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5084041)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5084041) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	109	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.2	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5084041)</b>							
ES2317677-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	86.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	100	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	78.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	89.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	85.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5084041)</b>							
ES2317677-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	79.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	99.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	95.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	103	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	100	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	87.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	90.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	90.4	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.9	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5084041)</b>							
ES2317677-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	89.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	77.5	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5084041) - continued</b>							
ES2317677-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	88.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	92.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	88.4	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5084041)</b>							
ES2317677-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	85.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	115	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	75.0	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2317703	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 26-May-2023
Site	: WLM	Issue Date	: 02-Jun-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW109D_230526	26-May-2023	31-May-2023	22-Nov-2023	✓	02-Jun-2023	22-Nov-2023	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW109D_230526	26-May-2023	31-May-2023	22-Nov-2023	✓	02-Jun-2023	22-Nov-2023	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW109D_230526	26-May-2023	31-May-2023	22-Nov-2023	✓	02-Jun-2023	22-Nov-2023	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW109D_230526	26-May-2023	31-May-2023	22-Nov-2023	✓	02-Jun-2023	22-Nov-2023	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW109D_230526	26-May-2023	31-May-2023	22-Nov-2023	✓	02-Jun-2023	22-Nov-2023	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2317703**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: PO BOX 73 HUNTER REGION MC HRMC NSW, AUSTRALIA 2310	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: 52558	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: WLM		
Sampler	: [REDACTED]		

### Dates

Date Samples Received	: 26-May-2023 13:00	Issue Date	: 26-May-2023
Client Requested Due Date	: 02-Jun-2023	Scheduled Reporting Date	: <b>02-Jun-2023</b>

### Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 2.0 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2317703-001	26-May-2023 11:45	0908_MW109D_230526	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)

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## CERTIFICATE OF ANALYSIS 323025

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████████
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<u>NSW_0908_PFASOMP_23</u>
<b>Number of Samples</b>	13 Water, 5 Soil
<b>Date samples received</b>	12/05/2023
<b>Date completed instructions received</b>	12/05/2023

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

<b>Date results requested by</b>	19/05/2023
<b>Date of Issue</b>	30/05/2023
<b>Reissue Details</b>	This report replaces R00 created on 19/05/2023 due to: Sample ID Amended (Client Request)
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### Results Approved By

██████████ Senior Chemist

#### Authorised By

██████████ Laboratory Manager

PFAS in Waters Extended						
Our Reference		323025-1	323025-2	323025-3	323025-4	323025-7
Your Reference	UNITS	0908_QC200_23 0508	0908_QC201_23 0508	0908_QC202_23 0508	0908_QC203_23 0509	0908_QC206_23 0509
Date Sampled		08/05/2023	08/05/2023	08/05/2023	09/05/2023	09/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.05	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.08	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.04	<0.01	1.1	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	0.07	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	3.9	<0.01	0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.06	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.23	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.03	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.06	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	98	96	95	97	94
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	83	78	81	86	85
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	90	90	97	95	100
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	87	82	88	92	94
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	110	108	109	111	109

PFAS in Waters Extended						
Our Reference		323025-1	323025-2	323025-3	323025-4	323025-7
Your Reference	UNITS	0908_QC200_23 0508	0908_QC201_23 0508	0908_QC202_23 0508	0908_QC203_23 0509	0908_QC206_23 0509
Date Sampled		08/05/2023	08/05/2023	08/05/2023	09/05/2023	09/05/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	63	66	77	70	90
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	76	77	80	79	86
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	107	104	101	110	106
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	105	112	117	113	118
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	113	116	115	110	111
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	108	105	101	109	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	93	101	109	103	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	102	101	112	105	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	104	105	105	102	114
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	69	63	71	73	72
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	126	133	130	139	137
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	92	96	93	100	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	116	124	122	119	123
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	106	101	105	103	106
Extracted ISTD d <sub>3</sub> N MeFOSA	%	108	102	114	113	115
Extracted ISTD d <sub>5</sub> N EtFOSA	%	112	114	123	117	116
Extracted ISTD d <sub>7</sub> N MeFOSE	%	104	104	98	107	98
Extracted ISTD d <sub>9</sub> N EtFOSE	%	108	108	108	101	103
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	130	153	142	140	139
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	97	104	128	102	102
Total Positive PFHxS & PFOS	µg/L	0.04	<0.01	4.9	<0.01	0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	3.9	<0.01	0.01
Total Positive PFAS	µg/L	0.04	<0.01	5.5	<0.01	0.01

PFAS in Waters Extended						
Our Reference		323025-9	323025-10	323025-12	323025-13	323025-15
Your Reference	UNITS	0908_QC208_23 0510	0908_QC209_23 0509	0908_QC211_23 0509	0908_QC212_23 0511	0908_QC214_23 0512
Date Sampled		10/05/2023	09/05/2023	09/05/2023	11/05/2023	12/05/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/L	0.06	<0.01	<0.01	0.84	<0.01
Perfluoropentanesulfonic acid	µg/L	0.09	<0.01	0.01	0.94	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	1.2	<0.01	0.11	16	0.02
Perfluoroheptanesulfonic acid	µg/L	0.08	<0.01	<0.01	1.3	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	8.5	<0.01	0.25	7.0	0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.04	<0.02	<0.02	0.25	<0.02
Perfluoropentanoic acid	µg/L	0.08	<0.02	<0.02	0.41	<0.02
Perfluorohexanoic acid	µg/L	0.23	<0.01	0.02	2.9	<0.01
Perfluoroheptanoic acid	µg/L	0.06	<0.01	<0.01	0.35	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.1	<0.01	<0.01	0.52	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	0.08	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	98	100	99	95	97
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	88	87	78	86	85
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	96	92	88	91	101
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	93	89	84	82	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	101	106	107	107	111
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	81	64	72	84	87



PFAS in Waters Extended						
Our Reference		323025-9	323025-10	323025-12	323025-13	323025-15
Your Reference	UNITS	0908_QC208_23 0510	0908_QC209_23 0509	0908_QC211_23 0509	0908_QC212_23 0511	0908_QC214_23 0512
Date Sampled		10/05/2023	09/05/2023	09/05/2023	11/05/2023	12/05/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	84	80	64	85	89
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	104	102	87	97	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	114	114	104	103	118
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	108	110	104	110	109
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	93	105	96	100	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	103	103	95	101	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	117	112	107	121	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	108	104	92	110	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	71	67	54	66	66
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	127	129	63	129	122
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	100	100	55	99	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	118	127	77	134	128
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	107	106	99	103	108
Extracted ISTD d <sub>3</sub> N MeFOSA	%	104	112	99	106	108
Extracted ISTD d <sub>5</sub> N EtFOSA	%	103	116	108	115	111
Extracted ISTD d <sub>7</sub> N MeFOSE	%	95	101	97	101	99
Extracted ISTD d <sub>9</sub> N EtFOSE	%	99	97	100	104	100
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	136	142	101	133	136
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	107	108	75	145	102
Total Positive PFHxS & PFOS	µg/L	9.7	<0.01	0.36	23	0.03
Total Positive PFOA & PFOS	µg/L	8.6	<0.01	0.25	7.5	0.01
Total Positive PFAS	µg/L	10	<0.01	0.39	30	0.03

PFAS in Waters Extended				
Our Reference		323025-16	323025-17	323025-18
Your Reference	UNITS	0908_QC215_23 0509	0908_QC217_23 0510	0908_QC219_23 0510
Date Sampled		09/05/2023	10/05/2023	10/05/2023
Type of sample		Water	Water	Water
Date prepared	-	16/05/2023	16/05/2023	16/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	1.1	0.11
Perfluoropentanesulfonic acid	µg/L	<0.01	2.2	0.18
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	20	1.6
Perfluoroheptanesulfonic acid	µg/L	<0.01	2.9	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	73	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	0.33	<0.02
Perfluoropentanoic acid	µg/L	<0.02	0.61	0.03
Perfluorohexanoic acid	µg/L	<0.01	3.5	0.16
Perfluoroheptanoic acid	µg/L	<0.01	0.68	0.03
Perfluorooctanoic acid PFOA	µg/L	<0.01	1.6	<0.01
Perfluorononanoic acid	µg/L	<0.01	0.02	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	96	98	99
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	92	81	88
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	97	89	97
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	97	102	88
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	109	109	111
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	91	48	96

PFAS in Waters Extended				
Our Reference		323025-16	323025-17	323025-18
Your Reference	UNITS	0908_QC215_23 0509	0908_QC217_23 0510	0908_QC219_23 0510
Date Sampled		09/05/2023	10/05/2023	10/05/2023
Type of sample		Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	87	72	84
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	106	104	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	116	101	114
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	108	107	113
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	107	71	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	102	104	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	97	120	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	101	113	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	62	71	66
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	127	143	124
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	97	93	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	113	122	114
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	109	105	110
Extracted ISTD d <sub>3</sub> N MeFOSA	%	109	111	113
Extracted ISTD d <sub>5</sub> N EtFOSA	%	111	116	113
Extracted ISTD d <sub>7</sub> N MeFOSE	%	99	99	100
Extracted ISTD d <sub>9</sub> N EtFOSE	%	99	103	104
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	133	148	131
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	108	140	102
Total Positive PFHxS & PFOS	µg/L	0.01	93	1.6
Total Positive PFOA & PFOS	µg/L	<0.01	75	<0.01
Total Positive PFAS	µg/L	0.01	110	2.1

PFAS in Soils Extended						
Our Reference		323025-5	323025-6	323025-8	323025-11	323025-14
Your Reference	UNITS	0908_QC204_23 0508	0908_QC205_23 0509	0908_QC207_23 0509	0908_QC210_23 0511	0908_QC213_23 0509
Date Sampled		08/05/2023	09/05/2023	09/05/2023	11/05/2023	09/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	1.5	<0.1	1.1	<0.1	0.6
Perfluoroheptanesulfonic acid	µg/kg	0.3	<0.1	<0.5	<0.1	0.2
Perfluorooctanesulfonic acid PFOS	µg/kg	28	0.9	24	3.4	25
Perfluorodecanesulfonic acid	µg/kg	0.3	<0.2	<1	<0.2	0.3
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<1	0.3	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<1	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.2	<0.1	<0.5	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<2	<0.5	<5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<20	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<1	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<1	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<10	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<10	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1	<1	<10	<1	<1
N-Me perfluorooctanesulfonamid ethanol	µg/kg	<1	<1	<10	<1	<1
N-Et perfluorooctanesulfonamid ethanol	µg/kg	<5	<5	<50	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<1	<0.2	<2	<0.2	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103	99	96	99	98
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	85	79	83	85	77
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	79	76	67	82	70
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	76	80	65	89	77
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	82	99	62	102	86

PFAS in Soils Extended						
Our Reference		323025-5	323025-6	323025-8	323025-11	323025-14
Your Reference	UNITS	0908_QC204_23 0508	0908_QC205_23 0509	0908_QC207_23 0509	0908_QC210_23 0511	0908_QC213_23 0509
Date Sampled		08/05/2023	09/05/2023	09/05/2023	11/05/2023	09/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	82	79	61	84	71
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	71	62	52	65	56
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	88	96	80	107	87
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	95	104	86	120	109
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	89	105	66	107	95
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	70	96	41	109	80
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	54	81	27	104	73
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	28	74	#	119	62
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	45	92	25	94	61
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	47	66	21	86	55
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	119	135	131	148	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	88	101	76	120	80
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	53	78	41	137	64
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	44	64	#	88	59
Extracted ISTD d <sub>3</sub> N MeFOSA	%	50	89	20	107	76
Extracted ISTD d <sub>5</sub> N EtFOSA	%	63	92	29	119	82
Extracted ISTD d <sub>7</sub> N MeFOSE	%	53	77	24	100	71
Extracted ISTD d <sub>9</sub> N EtFOSE	%	61	83	28	101	72
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	57	119	28	170	90
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	23	63	#	130	48
Total Positive PFHxS & PFOS	µg/kg	29	0.9	25	3.4	25
Total Positive PFOS & PFOA	µg/kg	28	0.9	24	3.4	25
Total Positive PFAS	µg/kg	30	0.9	25	3.7	26

Moisture						
Our Reference		323025-5	323025-6	323025-8	323025-11	323025-14
Your Reference	UNITS	0908_QC204_23 0508	0908_QC205_23 0509	0908_QC207_23 0509	0908_QC210_23 0511	0908_QC213_23 0509
Date Sampled		08/05/2023	09/05/2023	09/05/2023	11/05/2023	09/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/05/2023	15/05/2023	15/05/2023	15/05/2023	15/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Moisture	%	35	17	78	11	44

Method ID	Methodology Summary
<p><b>Inorg-008</b></p> <p><b>Org-029</b></p>	<p>Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.</p> <p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323025-2
Date prepared	-			16/05/2023	1	16/05/2023	16/05/2023		16/05/2023	16/05/2023
Date analysed	-			16/05/2023	1	16/05/2023	16/05/2023		16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	109	115
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	110	117
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	0.04	0.04	0	112	128
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	111	99
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	108	106
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	113
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	119
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	96	124
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	114	116
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	108
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	97
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	105
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	124	101
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	122	98
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	108	97
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	97	88
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	117	122
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	109
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	117
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	115
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	89	84
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	117
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	102	96
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	82	83
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	78	88
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	118	115
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	90	78
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	109
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	96	1	98	94	4	100	98
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	83	1	83	77	8	86	87



QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323025-2
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	94	1	90	91	1	87	84
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	88	1	87	86	1	82	83
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	109	1	110	109	1	102	103
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	99	1	63	62	2	88	63
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	87	1	76	75	1	79	68
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	100	1	107	102	5	92	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	115	1	105	112	6	95	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	109	1	113	115	2	98	95
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	108	1	108	106	2	91	92
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	91	1	93	98	5	81	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	104	1	102	115	12	81	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	112	1	104	103	1	90	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	66	1	69	70	1	65	63
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	121	1	126	134	6	98	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	100	1	92	104	12	86	81
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	126	1	116	126	8	98	100
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	110	1	106	102	4	90	85
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	108	1	108	111	3	98	98
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	108	1	112	114	2	101	107
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	97	1	104	106	2	95	95

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323025-2
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	97	1	108	106	2	90	102
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	132	1	130	140	7	88	95
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	133	1	97	128	28	91	89

QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	16	16/05/2023	16/05/2023		[NT]	[NT]
Date analysed	-			[NT]	16	16/05/2023	16/05/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	16	0.01	0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	16	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	16	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	16	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	16	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	[NT]	16	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	[NT]	16	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	[NT]	16	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	[NT]	16	<0.02	<0.02	0	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	[NT]	16	96	97	1	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	[NT]	16	92	83	10	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	[NT]	16	97	92	5	[NT]	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	[NT]	16	97	95	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	[NT]	16	109	107	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	[NT]	16	91	91	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	[NT]	16	87	89	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	[NT]	16	106	102	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	[NT]	16	116	114	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	[NT]	16	108	107	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	[NT]	16	107	105	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	[NT]	16	102	103	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	[NT]	16	97	105	8	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	[NT]	16	101	111	9	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	[NT]	16	62	67	8	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	[NT]	16	127	124	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	[NT]	16	97	101	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	[NT]	16	113	126	11	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	[NT]	16	109	109	0	[NT]	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	[NT]	16	109	108	1	[NT]	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	[NT]	16	111	111	0	[NT]	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	[NT]	16	99	98	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	[NT]	16	99	103	4	[NT]	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	[NT]	16	133	137	3	[NT]	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	[NT]	16	108	113	5	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	323025-6
Date prepared	-			16/05/2023	5	16/05/2023	16/05/2023		16/05/2023	16/05/2023
Date analysed	-			16/05/2023	5	16/05/2023	16/05/2023		16/05/2023	16/05/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	107	115
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	117	121
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	5	1.5	1.3	14	104	114
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	0.3	0.2	40	111	97
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	5	28	21	29	108	103
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	5	0.3	<0.2	40	115	113
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	113	130
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	106	135
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	5	0.2	<0.1	67	112	114
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	100	100
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	98	101
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	107	102
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	104	98
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<2	<2	0	123	102
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	94	101
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	94	97
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	5	<5	<5	0	102	126
4:2 FTS	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	107	108
6:2 FTS	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	111	122
8:2 FTS	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	120	123
10:2 FTS	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	95	128
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	115	133
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	104	96
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	90	87
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	5	<1	<1	0	96	101
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	5	<5	<5	0	117	107
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	89	72
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	5	<1	<1	0	103	131
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	99	5	103	94	9	102	98
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	90	5	85	81	5	95	82

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	323025-6
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	95	5	79	72	9	93	78
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	94	5	76	78	3	86	82
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	109	5	82	86	5	103	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	98	5	82	76	8	98	78
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	84	5	71	61	15	85	65
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	100	5	88	92	4	100	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	118	5	95	95	0	109	109
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	105	5	89	88	1	102	98
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	100	5	70	76	8	97	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	103	5	54	55	2	101	84
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	111	5	28	29	4	99	81
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	122	5	45	53	16	113	91
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	102	5	47	46	2	104	72
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	116	5	119	122	2	119	127
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	102	5	88	83	6	97	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	111	5	53	43	21	105	84
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	109	5	44	44	0	103	65
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	113	5	50	59	17	111	91
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	120	5	63	75	17	118	94
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	99	5	53	63	17	100	85

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	323025-6
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	108	5	61	66	8	105	84
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	132	5	57	63	10	118	118
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	145	5	23	27	16	133	69



**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

The PQL has been raised due to the high moisture content in sample 323025-8 resulting in a high dilution factor.

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]

### Sample Login Details

<b>Your reference</b>	NSW_0908_PFASOMP_23
<b>Envirolab Reference</b>	323025
<b>Date Sample Received</b>	12/05/2023
<b>Date Instructions Received</b>	12/05/2023
<b>Date Results Expected to be Reported</b>	19/05/2023

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	13 Water, 5 Soil
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	5
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

<b>Phone:</b> 02 9910 6200	<b>Phone:</b> 02 9910 6200
<b>Fax:</b> 02 9910 6201	<b>Fax:</b> 02 9910 6201
<b>Email:</b> [REDACTED]	<b>Email:</b> [REDACTED]

Analysis Underway, details on the following page:



Sample ID	PFAS in Waters Extended	PFAS in Soils Extended
0908_QC200_230508	✓	
0908_QC201_230508	✓	
0908_QC202_230508	✓	
0908_QC203_230509	✓	
0908_QC204_230508		✓
0908_QC205_230509		✓
0908_QC206_230509	✓	
0908_QC207_230509		✓
0908_QC208_230511	✓	
0908_QC209_230509	✓	
0908_QC210_230511		✓
0908_QC211_230509	✓	
0908_QC212_230511	✓	
0908_QC213_230509		✓
0908_QC214_2305	✓	
0908_QC215_2305	✓	
0908_QC217_2305	✓	
0908_QC219_2305	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.





## CERTIFICATE OF ANALYSIS 323025-A

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<b><u>NSW_0908_PFASOMP_23</u></b>
<b>Number of Samples</b>	additional analysis
<b>Date samples received</b>	12/05/2023
<b>Date completed instructions received</b>	15/06/2023

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

### Report Details

<b>Date results requested by</b>	22/06/2023
<b>Date of Issue</b>	21/06/2023
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### Results Approved By

██████ Organics Development Manager, Sydney

#### Authorised By

██████ Laboratory Manager



PFAS in Waters Extended		
Our Reference		323025-A-16
Your Reference	UNITS	0908_QC215_23 0509
Date Sampled		09/05/2023
Type of sample		Water
Date prepared	-	20/06/2023
Date analysed	-	20/06/2023
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	100
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	98
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	94
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	95
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	103

PFAS in Waters Extended		
Our Reference		323025-A-16
Your Reference	UNITS	0908_QC215_23 0509
Date Sampled		09/05/2023
Type of sample		Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	96
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	96
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	102
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	96
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	80
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	112
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	112
Extracted ISTD d <sub>3</sub> N MeFOSA	%	98
Extracted ISTD d <sub>5</sub> N EtFOSA	%	103
Extracted ISTD d <sub>7</sub> N MeFOSE	%	102
Extracted ISTD d <sub>9</sub> N EtFOSE	%	96
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	114
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	107
Total Positive PFHxS & PFOS	µg/L	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01
Total Positive PFAS	µg/L	<0.01

Method ID	Methodology Summary
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	323025-A-16
Date prepared	-			20/06/2023	[NT]	[NT]	[NT]	[NT]	20/06/2023	20/06/2023
Date analysed	-			20/06/2023	[NT]	[NT]	[NT]	[NT]	20/06/2023	20/06/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	100
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	103	105
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	102
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	103	109
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	103
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	86	87
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	98	105
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	98	103
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	103
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	102
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	96
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	93
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	104	110
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	89	93
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	99	93
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	84	86
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	100	100
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	99	101
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	102	102
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	96	87
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	123	123
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	102
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	109	110
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	98
N-Me perfluorooctanesulfonamid ethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	106	106
N-Et perfluorooctanesulfonamid ethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	102	110
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	109	104
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	95	96
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	99	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	99	98

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	323025-A-16
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	98	97
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	96	95
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	101	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	102	95
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	98	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	100	96
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	97	93
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	101	104
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	104	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	97	95
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	109	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	102	109
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	82	[NT]	[NT]	[NT]	[NT]	85	92
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	101	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	103	104
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	106	113
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	107	110
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	101
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	101	106
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	101	102

QUALITY CONTROL: PFAS in Waters Extended							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	323025-A-16
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	101	95
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	108	111
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	112	110

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.







Sample ID	PFAS in Waters Extended	On Hold
0908_QC200_230508		✓
0908_QC201_230508		✓
0908_QC202_230508		✓
0908_QC203_230509		✓
0908_QC204_230508		✓
0908_QC205_230509		✓
0908_QC206_230509		✓
0908_QC207_230509		✓
0908_QC208_230510		✓
0908_QC209_230509		✓
0908_QC210_230511		✓
0908_QC211_230509		✓
0908_QC212_230511		✓
0908_QC213_230509		✓
0908_QC214_230512		✓
0908_QC215_230509	✓	
0908_QC217_230510		✓
0908_QC219_230510		✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

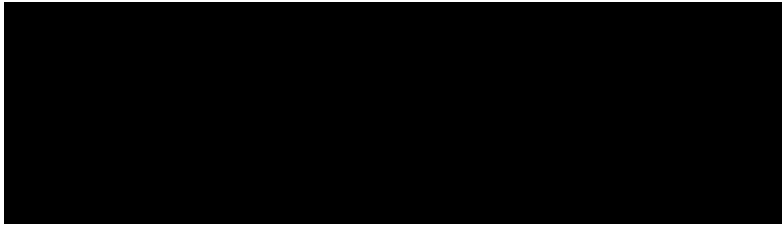
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

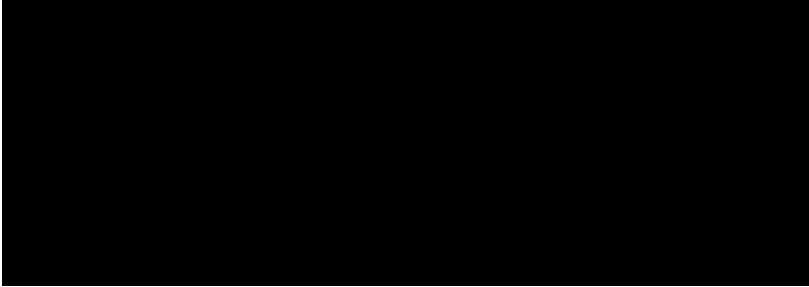
**From:**  
**Sent:**  
**To:**  
**Cc:**  
**Subject:**



Ref: 322025-A  
TAT: Standard  
Due: 22/06/2023  
M7

No worries.

@Samplereceipt, A- job please

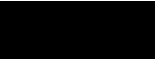


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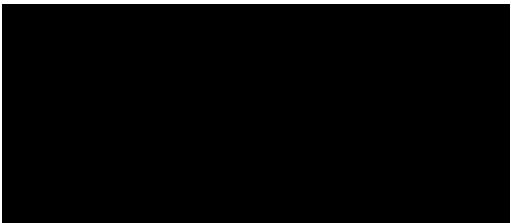
Samples will be analysed per our T&C's.



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Can you please organise to re-analyse the sample discussed below?



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*I acknowledge the Traditional Custodians of the Country on which we work and learn every day, and pay my respects to Elders past, present, and future.*

PS: I work flexibly. I'm sending this message now because it's a good time for me, but I don't expect you to read, respond or action it outside your own regular working hours.



Sure, no worries.

Kind Regards,

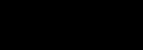


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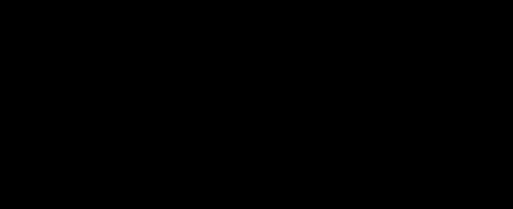
Samples will be analysed per our T&C's.



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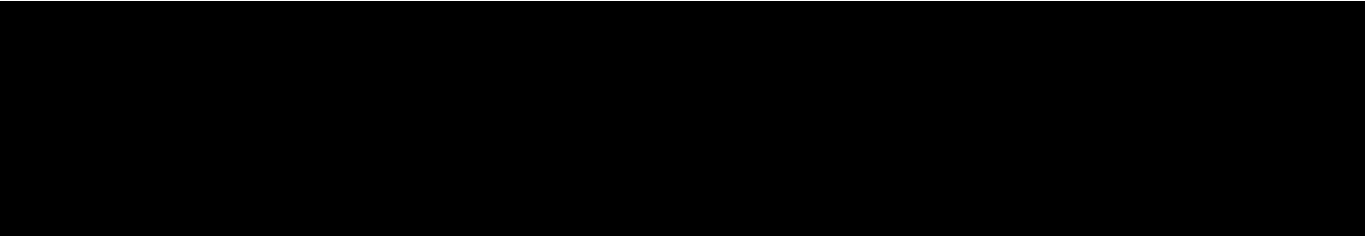
I can see that the PFHxS detection was confirmed in the laboratory duplicate. I will consult with my project manager on this and let you know. Can you please make sure the sample is not disposed until you hear back from me?



**AECOM**  
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*I acknowledge the Traditional Custodians of the Country on which we work and learn every day, and pay my respects to Elders past, present, and future.*

PS: I work flexibly. I'm sending this message now because it's a good time for me, but I don't expect you to read, respond or action it outside your own regular working hours.



Ok then let me check the lab duplicates and I'll let you know.

323025-A

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This would be a new workorder with a charge. Would you like to go ahead?

This sample has been run in duplicate originally already. Duplicate results can be found on page 16.

Please let me know if you'd like to proceed.

Thanks

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Samples will be analysed per our T&C's.

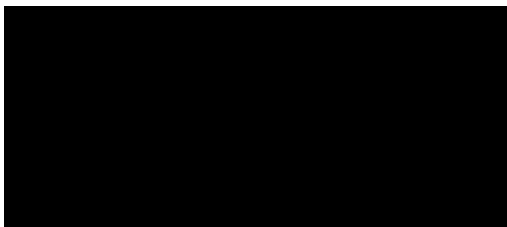
Would it be possible to please organise a re-analysis of the following sample in this work order?

323025-A

Sample Code	Field ID	Re-analyse
323025-16	0908_QC215_230509	PFAS Standard Full Suite

(16)

Please team let me if any costs would be involved and/or if it can be processed internally with the re-run results sent via email rather than a new work order.



AECOM

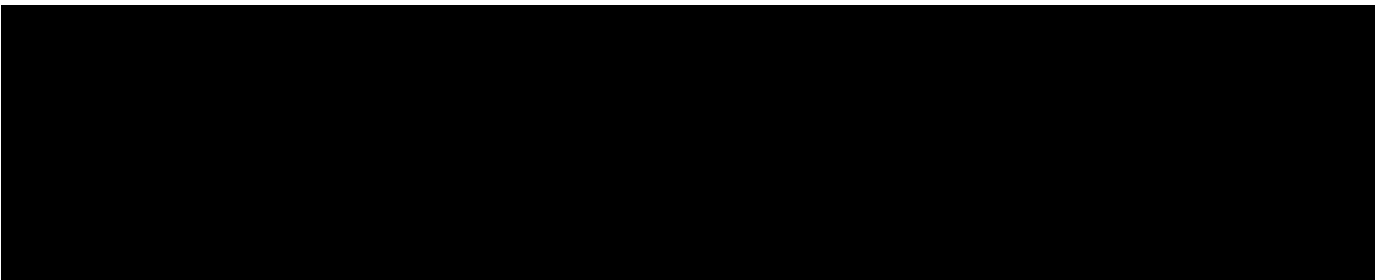
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PS: I work flexibly. I'm sending this message now because it's a good time for me, but I don't expect you to read, respond or action it outside your own regular working hours.

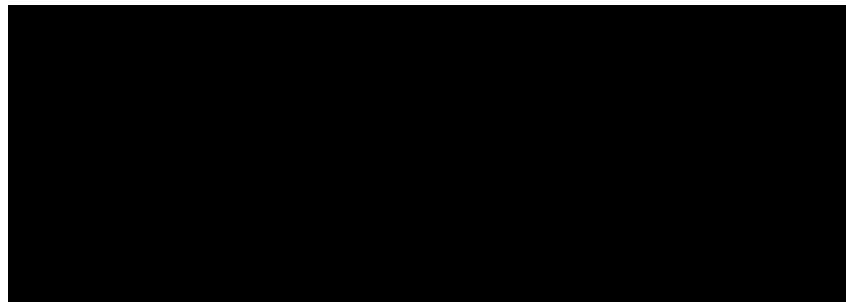


Please refer to attached for:  
a copy of the Certificate of Analysis  
a copy of the COC/paperwork received from you  
ESDAT Extracts  
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:  
[customerservice@envirolab.com.au](mailto:customerservice@envirolab.com.au)

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## CERTIFICATE OF ANALYSIS 323627

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<b><u>NSW_0908_PFASOMP_23</u></b>
<b>Number of Samples</b>	1 Soil, 2 Water
<b>Date samples received</b>	19/05/2023
<b>Date completed instructions received</b>	19/05/2023

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

### Report Details

<b>Date results requested by</b>	26/05/2023
<b>Date of Issue</b>	25/05/2023
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### Results Approved By

██████ Senior Chemist  
 ██████ Organics Development Manager, Sydney

#### Authorised By

██████ Laboratory Manager

PFAS in Soils Extended		
Our Reference		323627-1
Your Reference	UNITS	0908_QC216_23 0516
Date Sampled		16/05/2023
Type of sample		Soil
Date prepared	-	23/05/2023
Date analysed	-	23/05/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.3
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.3
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	<0.2
Perfluoropentanoic acid	µg/kg	<0.2
Perfluorohexanoic acid	µg/kg	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1
Perfluorononanoic acid	µg/kg	<0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	<0.1
8:2 FTS	µg/kg	<0.2
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	99
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	83
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	89



PFAS in Soils Extended		
Our Reference		323627-1
Your Reference	UNITS	0908_QC216_23 0516
Date Sampled		16/05/2023
Type of sample		Soil
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	87
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	87
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	96
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	92
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	93
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	114
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	85
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	78
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	94
Extracted ISTD d <sub>3</sub> N MeFOSA	%	108
Extracted ISTD d <sub>5</sub> N EtFOSA	%	111
Extracted ISTD d <sub>7</sub> N MeFOSE	%	106
Extracted ISTD d <sub>9</sub> N EtFOSE	%	100
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	125
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	100
Total Positive PFHxS & PFOS	µg/kg	0.6
Total Positive PFOS & PFOA	µg/kg	0.3
Total Positive PFAS	µg/kg	0.6

Moisture		
Our Reference		323627-1
Your Reference	UNITS	0908_QC216_23 0516
Date Sampled		16/05/2023
Type of sample		Soil
Date prepared	-	23/05/2023
Date analysed	-	24/05/2023
Moisture	%	22

PFAS in Waters Extended			
Our Reference		323627-2	323627-3
Your Reference	UNITS	0908_QC218_23 0517	0908_QC220_23 0518
Date Sampled		17/05/2023	18/05/2023
Type of sample		Water	Water
Date prepared	-	22/05/2023	22/05/2023
Date analysed	-	22/05/2023	22/05/2023
Perfluorobutanesulfonic acid	µg/L	0.05	<0.01
Perfluoropentanesulfonic acid	µg/L	0.06	0.05
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.24	0.19
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.08	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.06	0.08
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid ethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid ethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	105	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	113	110
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	94	103
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	102	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	100	102

PFAS in Waters Extended			
Our Reference		323627-2	323627-3
Your Reference	UNITS	0908_QC218_23 0517	0908_QC220_23 0518
Date Sampled		17/05/2023	18/05/2023
Type of sample		Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	55	86
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	86	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	117	109
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	141	135
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	105	103
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	103	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	107	109
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	109	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	96	95
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	67	65
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	121	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	103	100
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	98	106
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	110	110
Extracted ISTD d <sub>3</sub> N MeFOSA	%	112	111
Extracted ISTD d <sub>5</sub> N EtFOSA	%	122	120
Extracted ISTD d <sub>7</sub> N MeFOSE	%	108	98
Extracted ISTD d <sub>9</sub> N EtFOSE	%	90	91
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	136	144
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	110	122
Total Positive PFHxS & PFOS	µg/L	0.32	0.19
Total Positive PFOA & PFOS	µg/L	0.08	<0.01
Total Positive PFAS	µg/L	0.50	0.32



QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			23/05/2023	1	23/05/2023	23/05/2023		23/05/2023	[NT]
Date analysed	-			23/05/2023	1	23/05/2023	23/05/2023		23/05/2023	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	0.3	0.3	0	111	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	105	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	0.3	0.4	29	103	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	86	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	108	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	108	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	96	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	112	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	96	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	97	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	104	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	105	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	139	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	105	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	102	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	95	[NT]
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	117	[NT]
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	105	[NT]
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	102	[NT]
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	106	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	98	1	103	102	1	99	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	102	1	99	101	2	99	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	99	1	83	86	4	95	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	107	1	100	97	3	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	96	1	89	88	1	98	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	94	1	87	91	4	97	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	101	1	87	89	2	102	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	101	1	96	92	4	105	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	103	1	104	98	6	112	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	102	1	92	91	1	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	95	1	93	94	1	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	109	1	110	104	6	106	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	119	1	112	101	10	121	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	119	1	105	112	6	119	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	111	1	114	114	0	126	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	87	1	85	83	2	105	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	93	1	90	84	7	109	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	91	1	78	75	4	107	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	101	1	94	95	1	101	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	108	1	108	102	6	105	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	111	1	111	109	2	111	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	97	1	106	100	6	107	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	104	1	100	104	4	102	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	114	1	125	117	7	115	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	115	1	100	104	4	118	[NT]



QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323627-3
Date prepared	-			22/05/2023	2	22/05/2023	22/05/2023		22/05/2023	22/05/2023
Date analysed	-			22/05/2023	2	22/05/2023	22/05/2023		22/05/2023	22/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	0.05	0.06	18	105	119
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	0.06	0.06	0	118	116
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	2	0.24	0.23	4	113	115
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	120	105
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	2	0.08	0.08	0	105	104
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	103	108
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	104	109
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	120	117
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	2	0.06	0.07	15	113	115
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	88	83
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	103	101
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	112	118
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	112	112
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	107	113
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	113	110
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	111	108
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	2	<0.5	<0.5	0	109	116
4:2 FTS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	99	91
6:2 FTS	µg/L	0.01	Org-029	<0.01	2	<0.01	<0.01	0	104	108
8:2 FTS	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	105	113
10:2 FTS	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	91	79
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	102	104
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	105	107
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	2	<0.1	<0.1	0	89	85
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	<0.05	2	<0.05	<0.05	0	119	108
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	<0.5	2	<0.5	<0.5	0	133	135
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	97	87
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	2	<0.02	<0.02	0	90	103
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	99	2	105	100	5	99	98
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	114	2	113	110	3	117	118

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323627-3
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	100	2	94	96	2	94	100
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	95	2	102	106	4	91	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	101	2	100	101	1	100	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	102	2	55	56	2	99	84
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	95	2	86	86	0	92	88
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	107	2	117	114	3	102	109
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	115	2	141	146	3	113	132
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	98	2	105	103	2	95	96
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	100	2	103	102	1	99	102
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	97	2	107	102	5	97	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	95	2	109	109	0	96	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	103	2	96	96	0	87	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	61	2	67	66	2	64	66
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	84	2	121	125	3	94	123
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	93	2	103	104	1	97	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	95	2	98	96	2	106	108
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	111	2	110	113	3	104	105
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	102	2	112	115	3	101	108
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	104	2	122	122	0	99	114
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	93	2	108	107	1	91	101

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	323627-3
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	83	2	90	91	1	85	89
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	128	2	136	133	2	111	120
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	112	2	110	115	4	113	108

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████

### Sample Login Details

<b>Your reference</b>	NSW_0908_PFASOMP_23
<b>Envirolab Reference</b>	323627
<b>Date Sample Received</b>	19/05/2023
<b>Date Instructions Received</b>	19/05/2023
<b>Date Results Expected to be Reported</b>	26/05/2023

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	Yes
<b>No. of Samples Provided</b>	1 Soil, 2 Water
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	4
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Nil

Please direct any queries to:

████████████████████	████████████████████
<b>Phone: 02 9910 6200</b>	<b>Phone: 02 9910 6200</b>
<b>Fax: 02 9910 6201</b>	<b>Fax: 02 9910 6201</b>
<b>Email: ████████████████████</b>	<b>Email: ████████████████████</b>

*Analysis Underway, details on the following page:*



Sample ID	PFAS in Soils Extended	PFAS in Waters Extended
0908_QC216_230516	✓	
0908_QC218_230517		✓
0908_QC220_230518		✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.







## CERTIFICATE OF ANALYSIS

Work Order : **ES2326636**  
Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
Telephone : ----  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : 55791  
Sampler : **[REDACTED]**  
Site : WLM off-site  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 2  
No. of samples analysed : 2

Page : 1 of 5  
Laboratory : Environmental Division Sydney  
Contact : **[REDACTED]**  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 09-Aug-2023 09:31  
Date Analysis Commenced : 11-Aug-2023  
Issue Date : 14-Aug-2023 16:10



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

**[REDACTED]**

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_23080 9	0908_MW270D_23080 9	----	----	----
Sampling date / time				09-Aug-2023 08:30	09-Aug-2023 08:10	----	----	----
Compound	CAS Number	LOR	Unit	ES2326636-001 Result	ES2326636-002 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.04</b>	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<b>0.09</b>	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.08</b>	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<b>0.04</b>	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.02</b>	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW270S_23080 9	0908_MW270D_23080 9	----	----	----
Sampling date / time				09-Aug-2023 08:30	09-Aug-2023 08:10	----	----	----
Compound	CAS Number	LOR	Unit	ES2326636-001	ES2326636-002	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.27</b>	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.04</b>	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.27</b>	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>88.1</b>	<b>92.5</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>94.6</b>	<b>93.5</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: <b>ES2326636</b>	Page	: 1 of 4
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 09-Aug-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 11-Aug-2023
C-O-C number	: 55791	Issue Date	: 14-Aug-2023
Sampler	: [REDACTED]		
Site	: WLM off-site		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 2		
No. of samples analysed	: 2		



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Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5229858)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	92.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.7	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	110	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5229858)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	93.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	105	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.5	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	97.0	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	76.6	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5229858)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	107	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	96.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	106	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	87.4	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5229858)</b>								





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5229858) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	98.6	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	83.3	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	106	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	87.4	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2326636	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 09-Aug-2023
Site	: WLM off-site	Issue Date	: 14-Aug-2023
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230809,	0908_MW270D_230809	09-Aug-2023	11-Aug-2023	05-Feb-2024	✓	14-Aug-2023	05-Feb-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230809,	0908_MW270D_230809	09-Aug-2023	11-Aug-2023	05-Feb-2024	✓	14-Aug-2023	05-Feb-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230809,	0908_MW270D_230809	09-Aug-2023	11-Aug-2023	05-Feb-2024	✓	14-Aug-2023	05-Feb-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230809,	0908_MW270D_230809	09-Aug-2023	11-Aug-2023	05-Feb-2024	✓	14-Aug-2023	05-Feb-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW270S_230809,	0908_MW270D_230809	09-Aug-2023	11-Aug-2023	05-Feb-2024	✓	14-Aug-2023	05-Feb-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✘ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	5	0.00	10.00	✘	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	5	0.00	5.00	✘	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2326636

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 55791  
Site : WLM off-site  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 09-Aug-2023 09:31  
Client Requested Due : 14-Aug-2023  
Date

Issue Date : 11-Aug-2023  
Scheduled Reporting Date : **14-Aug-2023**

### Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 5.6°C - Ice present  
No. of samples received / analysed : 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- This is an updated SRN which indicates the new scheduled release date for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2326636-001	09-Aug-2023 08:30	0908_MW270S_230809	✓
ES2326636-002	09-Aug-2023 08:10	0908_MW270D_230809	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



Email



Email



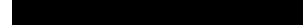
Email



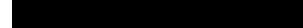
Email



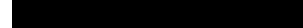
Email



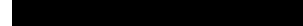
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Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email



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RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *SC [Signature]*  
 DATE TIME: 9/18/23 1935

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP\_23  
 SITE: WLM off-site  
 ORDER NO:  
 PROJECT MANAGER: Jessica Roy  
 PRIMARY SAMPLER: Imogen Waters  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
Free ice frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: 5.6 °C  
 Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW270S_230809		09/08/2023 08:30 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0908_MW270D_230809		09/08/2023 08:10 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2326636**



Telephone : + 61-2-8784 8555



RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *Scotty*  
 DATE TIME: *9/12/23 19:35*

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFSOMP\_23  
 SITE: WLM off-site  
 ORDER NO:  
 PROJECT MANAGER:  
 PRIMARY SAMPLER:  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No *N/A*  
 Free ice / frozen ice bricks present upon receipt? *Yes* No N/A

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

Random Sample Temperature on Receipt: *5.6* °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW270S_230809	HDPE (no PTFE)	20 mL	00352101040324	Grey	No	
001	0908_MW270S_230809	HDPE (no PTFE)	20 mL	00352101040410	Grey	No	
002	0908_MW270D_230809	HDPE (no PTFE)	20 mL	00350621036959	Grey	No	
002	0908_MW270D_230809	HDPE (no PTFE)	20 mL	00350621036717	Grey	No	

**Total Bottle Count: ALS: 4, Non ALS: 0**



## CERTIFICATE OF ANALYSIS

Work Order : **ES2326637**  
Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304  
Telephone : ----  
Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1  
C-O-C number : 55792  
Sampler : **[REDACTED]**  
Site : WLM off-site rinsate  
Quote number : SY/139/19 v4 60612562\_2.1  
No. of samples received : 1  
No. of samples analysed : 1

Page : 1 of 5  
Laboratory : Environmental Division Sydney  
Contact : **[REDACTED]**  
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164  
Telephone : +61 2 8784 8555  
Date Samples Received : 09-Aug-2023 09:31  
Date Analysis Commenced : 11-Aug-2023  
Issue Date : 16-Aug-2023 13:41



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

**[REDACTED]**

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID			0908_QC300_230809	----	----	----	----
		Sampling date / time			09-Aug-2023 09:27	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2326637-001	-----	-----	-----	-----	-----
				Result	---	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----	----



## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)		Sample ID	0908_QC300_230809					
		Sampling date / time	09-Aug-2023 09:27					
Compound	CAS Number	LOR	Unit	ES2326637-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>99.7</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>98.6</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: <b>ES2326637</b>	Page	: 1 of 4
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: 17 WARABROOK BLVD NEWCASTLE Newcastle 2304	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 09-Aug-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 11-Aug-2023
C-O-C number	: 55792	Issue Date	: 16-Aug-2023
Sampler	: [REDACTED]		
Site	: WLM off-site rinsate		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5233985)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	114	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	103	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5233985)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	110	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	93.5	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	114	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5233985)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	112	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	110	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	103	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.5	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5233985)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
					LCS	Low	High		
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5233985) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	109	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	114	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	104	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	107	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2326637	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 09-Aug-2023
Site	: WLM off-site rinsate	Issue Date	: 16-Aug-2023
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



### Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS) Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC300_230809	09-Aug-2023	15-Aug-2023	05-Feb-2024	✓	16-Aug-2023	05-Feb-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC300_230809	09-Aug-2023	15-Aug-2023	05-Feb-2024	✓	16-Aug-2023	05-Feb-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_QC300_230809	09-Aug-2023	15-Aug-2023	05-Feb-2024	✓	16-Aug-2023	05-Feb-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_QC300_230809	09-Aug-2023	15-Aug-2023	05-Feb-2024	✓	16-Aug-2023	05-Feb-2024	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_QC300_230809	09-Aug-2023	15-Aug-2023	05-Feb-2024	✓	16-Aug-2023	05-Feb-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	16.67	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2326637

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : 17 WARABROOK BLVD  
NEWCASTLE Newcastle 2304

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 55792  
Site : WLM off-site rinsate  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 09-Aug-2023 09:31  
Client Requested Due Date : 16-Aug-2023

Issue Date : 10-Aug-2023  
Scheduled Reporting Date : **16-Aug-2023**

### Delivery Details

Mode of Delivery : Undefined  
No. of coolers/boxes : 1  
Receipt Detail :

Security Seal : Intact.  
Temperature : 5.6°C - Ice present  
No. of samples received / analysed : 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2326637-001	09-Aug-2023 09:27	0908_QC300_230809	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for EQUIS (ESRN\_EQUIS)

Email

Email

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ENMRG (ENMRG)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)
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- Electronic SRN for EQUIS (ESRN\_EQUIS)

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 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: WLM off-site rinsate

ORDER NO:

PROJECT MANAGER: [Redacted]  
 PRIMARY SAMPLER: [Redacted]

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

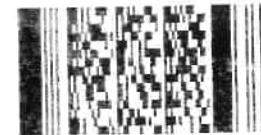
Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: *5.2* °C  
 Other comments:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_QC300_230809		09/08/2023 09:27 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2326637**



Telephone : +61-2-6784 6555

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DATE TIME:

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DATE TIME:

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DATE TIME:

RECEIVED BY:  
DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASOMP\_23  
 SITE: WLM off-site rinsate  
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 PROJECT MANAGER:  
 PRIMARY SAMPLER:  
 EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

TURNAROUND REQUIREMENTS : 5 Days  
 Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_QC300_230809	HDPE (no PTFE)	20 mL	00352101040614	Grey	No	
001	0908_QC300_230809	HDPE (no PTFE)	20 mL	00352101040374	Grey	No	

**Total Bottle Count: ALS: 2, Non ALS: 0**

# Sampling Event Factual Report, November 2023

PFAS OMP - RAAF Base Williamtown

16-Apr-2024

Doc No. 20240416\_OMP002\_WLM\_SamplingEventFactualReport\_Rev0

# Sampling Event Factual Report, November 2023

PFAS OMP - RAAF Base Williamtown

Client: Department of Defence

ABN: 68706814312

Prepared by

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## List of Acronyms

Acronym	Term
ADWG	Australian Drinking Water Guidelines
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure
BOM	Bureau of Meteorology
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQI	Data Quality Indicator
DQO	Data Quality Objective
EC	Electrical Conductivity
EPA	Environment Protection Authority
FSANZ	Food Standards Australia New Zealand
HEPA	Heads of Environment Protection Authority
HHERA	Human Health and Ecological Risk Assessment
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Analytical Testing Authority
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OMR	Ongoing Monitoring Report
OMP	Ongoing Monitoring Plan
ORP	Oxidation Reduction Potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling and Analysis Quality Plan



Acronym	Term
SD	Sediment
SW	Surface Water
SWL	Standing Water Level
TOC	Top of Casing
WQM	Water Quality Meter

## List of Units

Units	Term
°C	Degrees Celsius
µg/L	Micrograms per Litre
µS/cm	MicroSiemens per centimetre
g	Grams
km	Kilometre
L	Litre
m	Metre
mAHD	Metres Australian Height Datum
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mV	MilliVolts

## 1.0 Introduction

### 1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) at the RAAF Base Williamtown (the 'Site', Site ID 0908) and the Williamtown Management Area in New South Wales (NSW). The location of the Site and Management Area is shown in **Figure F1** in **Appendix A**.

The OMP (AECOM, 2019) outlines the sampling requirements for the Site and off-Site areas within the Management Area.

Following each sampling event, factual sampling event reports will be prepared. Ongoing Monitoring Reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the November 2023 biannual sampling event, specifically highlighting first-time detections and/or new exceedances of human health or ecological screening criteria for the sum of perfluorooctane sulfonic acid (PFOS) and perfluorohexane sulfonic acid (PFHxS) (herein referred to as PFOS+PFHxS), PFOS and/or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the Defence *PFAS OMP Factual Report Guidance (Version 0.2)* issued in May 2021 (Defence, 2021).

### 1.2 Objectives

The objectives were to:

- implement the OMP (AECOM, 2019) prepared as part of the Detailed Environmental Investigations; and
- collect data that will enable Defence to maintain an up to date understanding of the distribution, concentration, transport, and transformation of PFAS.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PFAS Management Area Plan (PMAP) (Defence, 2019).

The objective of this phase of works was to implement the scope of works for the November 2023 biannual sampling event in accordance with the Sampling and Analysis Quality Plan (SAQP) (AECOM, 2023).

## 2.0 Scope of Work

The scope of work was completed in general accordance with the SAQP (AECOM, 2023), as follows:

- obtain permission (where required) to conduct works at the Site, off-Site publicly accessible areas and at private properties
- gauging of groundwater level in monitoring wells prior to collection of samples
- groundwater sampling and collection of water quality parameters at 92 of 94 scheduled monitoring wells and bores (refer to **Table 1** below and **Figure F2** in **Appendix A** for specific locations)
- surface water sampling and collection of water quality parameters at 21 of 22 scheduled surface water locations (refer to **Table 2** below and **Figure F3** in **Appendix A** for specific locations)
- sediment sampling at all 25 scheduled sediment locations (refer to **Table 3** below and **Figure F4** in **Appendix A** for specific locations)
- collection of field duplicate samples at a rate of 1 in 10 primary samples
- analysis of samples for PFAS suite at the standard limit of reporting (LOR)
- data management of the OMP field and laboratory data in Defence ESdat database
- preparation of Sampling Event Factual Report.

The deviations from the scheduled scope of works are discussed in detail in **Section 3.0**.

Note: due to privacy considerations, selected monitoring locations are unable to be shown on the figures in **Appendix A**.

**Table 1** Groundwater Sampling Locations

On/Off-Site	Area	Sampling Location	Total
On-Site	Former & Current Fire Station (Facility 165)	MW196, MW198, MW202S, MW202D	4
	Former Fire Training Area	MW166, MW167, MW168, MW169S, MW169D	5
	Former DEMS Landfill (Facility 394)	MW240D, MW281S, MW282S	3
	East of Former DEMS Landfill (Facility 394)	MW172	1
	Ordnance Loading Area	MW244S, MW244D	2
	Lake Cochran	MW108S, MW108D, MW109D, MW175D, MW179S, MW179D, MW466, MW468	8
	Northeast Landfill	MW156D, MW209S*, MW209D*, MW433	4
	Trade Waste Treatment Plant (Facility 480)	MW106S, MW106D, MW212, MW208	4
	HWC Pump Station 7 (PS7)	MW134I, MW134D	2

On/Off-Site	Area	Sampling Location	Total
Off-Site	Cabbage Tree Road	MW124, MW125S, MW125D, MW126S, MW126D, <b>MW139</b> , MW178, <b>MW230S</b> , <b>MW236S</b> , <b>MW236D</b> , <b>MW238D</b> , <b>MW238S</b>	12
	East of Site - HWC Pump Station 9 (PS9)	MW130S, MW130D, MW132S, MW132D, MW160, MW318S, MW318D, MW829	8
	East of Site - Moors Drain	MW247S, MW247D	2
	East of Site – Nelson Bay Road	MW121, MW122, MW162S, MW162D	4
	Fullerton Cove	<b>MW231D</b> , <b>MW231S</b> , MW232S, MW232D, <b>POT382</b>	5
	Lavis Lane	MW128S, MW128D, MW163, MW279S, MW316D	5
	Salt Ash	MW118, MW123, MW256S, MW256D, MW257S, MW257D, MW258S, MW258D, MW260S, MW260D, MW263D, MW263S	12
	Southern Area – Cabbage Tree Road	MW146AD, MW146S, MW271D, MW271S, MW278D, MW278S	6
	West of Site	MW107S, MW107D, MW241S, MW241D, MW280S, MW315S, MW315D	7
<b>Total</b>			<b>94</b>
* Location not sampled <b>Bold</b> text denotes private property location			

Table 2 Surface Water Sampling Locations

Area	Sampling Location	Total
Lake Cochran & On-Site Drains	SW047, SW048, SW108, SW110	4
Dawsons Drain	SW055, SW059, SW060	3
Fourteen Foot Drain	SW062, <b>SW600</b>	2
Ten Foot Drain	SW081	1
Moors Drain	SW001, SW005, SW006*, SW007, SW009, SW011, SW014	7
Fullerton Cove Ring Drain	<b>SW259</b>	1
Tilligerry Creek	<b>SW019</b> , SW023, SW024, SW079	4
<b>Total</b>		<b>22</b>
* Location not sampled <b>Bold</b> text denotes private property location		

Table 3 Sediment Sampling Locations

Area	Sampling Location	Total
Lake Cochran & On-Site Drains	SD047, SD048, SD108, SD110	4
Dawsons Drain	SD055, SD059, SD060	3
Fourteen Foot Drain	SD062, <b>SD600</b>	2

Area	Sampling Location	Total
Ten Foot Drain	SD081	1
Moors Drain	SD001, SD005, SD006, SD007, SD009, SD011, SD014	7
Fullerton Cove Ring Drain	<b>SD259</b>	1
Fullerton Cove (tidal gate outlet)	<b>SD254, SD255, SD326</b>	3
Tilligerry Creek	<b>SD019, SD023, SD024, SD079</b>	4
<b>Total</b>		<b>25</b>
<b>Bold</b> text denotes private property location		

### 3.0 Deviations from the SAQP

The November 2023 biannual sampling event was completed in general accordance with the SAQP (AECOM, 2023) with the exception of the deviations outlined in **Table 4** below.

**Table 4** Deviations from SAQP

SAQP Deviation	Comment / Justification	Impact on Dataset
Samples, and associated gauging data and field parameters, were not collected from two of the 94 scheduled groundwater sampling locations.	Groundwater monitoring wells MW209S and MW209D were covered by a soil stockpile and could not be gauged and sampled during this event.	The lack of gauging and sampling data for these monitoring wells are not considered to have a significant impact on the dataset, or present a significant data gap, as other nearby monitoring wells MW156D, MW132S, MW132D, MW208, MW433 were able to be gauged and sampled during this event.
Samples, and associated field parameters, were not collected from one of the 22 scheduled surface water sampling locations.	Surface water location SW006 was dry and therefore could not be sampled.	The lack of sampling data for SW006 (which is discharging from the Base boundary into Moors Drain) is not considered to represent a significant data gap as a surface water location further downstream on Moors Drain (SW009) was sampled.
Gauging data was not collected from two of the selected 33 monitoring wells as part of the gauging round.	Groundwater monitoring wells MW209S/D were not able to be accessed (as described above).	The lack of gauging data for these monitoring wells are not considered to have a significant impact on the dataset, as other representative monitoring wells were able to be gauged, enabling development of the groundwater elevation contours.
Groundwater samples at one of the 94 scheduled groundwater sampling locations was collected with a high-density polyethylene (HDPE) bailer.	Upon arrival at location MW241S, the field team identified that no HydraSleeve™ was present within the well. The sample was collected with a disposable bailer due to a miscommunication.	The analytical results from this sampling event were consistent with the historical dataset, therefore the change in sampling method at this location during this sampling event is not considered to have a significant impact on the dataset.

## 4.0 Methodology

### 4.1 Sampling Methodology

The methodology used for the November 2023 biannual sampling event was in general accordance with the SAQP (AECOM, 2023) and is summarised in **Table 5** below.

**Table 5 Sampling Methodology**

Item	Details
Groundwater gauging	<p>The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples.</p> <p>In addition, a targeted gauging round including 33 selected monitoring wells was completed to generate data for the groundwater elevation contours and assess groundwater flow direction. It is noted that, of the selected locations, two locations were not able to be gauged as they were unable to be located. The targeted gauging round was completed on 24 November 2023.</p> <p>Measurements of depth to groundwater were undertaken using a decontaminated interface probe, which was serviced by the supplier prior to use. The equipment supplier records are provided in <b>Appendix C</b>.</p>
Field parameters	<p>Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for groundwater and surface water samples.</p> <p>Water quality parameters were collected using a calibrated water quality meter (WQM). The equipment supplier and field calibration records are provided in <b>Appendix C</b>.</p>
Sampling methodology	<p><b>Groundwater Monitoring Wells</b></p> <p>Groundwater samples were generally collected from each monitoring well using HydraSleeves™, a no-purge sampling methodology.</p> <p>HydraSleeves™ were installed within the screened interval of the wells for a minimum of 4 hours prior to the sampling round, based on a review of the well construction log. All HydraSleeves™ were installed with bottom weights only. For this event, all the HydraSleeves™ were installed during the previous sampling event in May 2023, with the exception of two which were installed during this sampling event in November 2023.</p> <p>HydraSleeves™ were damaged or not found in monitoring wells MW118 and MW208. At these locations AECOM installed HydraSleeves™ and returned after a minimum of 4 hours to collect the groundwater samples.</p> <p>Once sampling was completed, new HydraSleeves™ were deployed in each of the monitoring wells, within the screened interval depth in preparation for the next sampling round.</p> <p>During this sampling event, monitoring location MW241S was sampled with a bailer after no HydraSleeve™ was found in the well, due to a miscommunication.</p> <p>Monitoring location MW829 is a non-traditional well with no well cap or gatic (pump station bore/sampling point) and was sampled using a bailer, as per the SAQP (AECOM, 2023).</p> <p>At each location, new laboratory supplied containers were used with the cap immediately applied once the container was full.</p> <p><b>Residential Bores</b></p>

Item	Details
	<p>Bore water samples were collected by placing a laboratory provided sample bottle beneath the tap outlet to collect the “first flush” of water. At each location, new laboratory supplied containers were used with the cap immediately applied once the container was full.</p> <p><b>Surface Water</b></p> <p>Surface water samples were collected from either mid-way through the water column or approximately 0.5 m below the surface, without disturbing the bottom of the surface water body, and without capturing any surface film or floating materials in the samples.</p> <p>At each location, a new, laboratory supplied container was lowered into the water (either by hand or using a sampling pole) with the cap immediately applied once the container was full.</p> <p><b>Sediment</b></p> <p>Sediment samples representative of potentially deposited sediments were collected from within the water body, using a decontaminated hand trowel to a maximum depth of 0.3 metres below ground level (mbgl). A new laboratory supplied container was used at each location for collection of samples.</p>
QA/QC Samples	<p>A QA/QC program was implemented for the sampling and analysis program in order to obtain representative data and assess the reliability of the data obtained.</p> <p>To facilitate the QA/QC program the following sample types were obtained during the sampling program:</p> <ul style="list-style-type: none"> <li>• <i>Intra-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The relative percentage difference (RPD) should be less than 30%, or less than 50% if results are less than 20 times the LOR. Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Inter-laboratory duplicates</i> collected at a rate of 1 in 10 primary samples. The RPD should be less than 30%, or less than 50% if results are less than 20 times the LOR. Higher RPDs may also be acceptable if results are less than 10 times the LOR.</li> <li>• <i>Rinsate blanks</i> collected at a frequency of one per set of sampling equipment per day where equipment was reused between locations. Analytical results should be below the laboratory LOR.</li> </ul> <p>For this November 2023 biannual sampling event, the QA/QC samples included:</p> <ul style="list-style-type: none"> <li>• 15 x intra-laboratory duplicates (9 groundwater, 3 surface water and 3 sediment) which met the total target frequency</li> <li>• 15 x inter-laboratory duplicates (9 groundwater, 3 surface water and 3 sediment) which met the total target frequency</li> <li>• 14 x rinsate blanks, which met the target frequency.</li> </ul> <p>The data validation assessment is presented in <b>Appendix D</b>.</p>



Item	Details
Sample analysis	<p>Samples were submitted to the primary and secondary laboratories for PFAS suite at the standard LOR.</p> <p>ALS Environmental (ALS) Sydney, NSW was used as the primary laboratory. Envirolab Services (Envirolab) Sydney, NSW was used as the secondary laboratory. ALS and Envirolab methods for analyses were certified by the National Association of Testing Authorities (NATA).</p> <p>A summary of the laboratory results is presented in <b>Section 5.3</b> and the laboratory certificates are presented in <b>Appendix E</b>.</p>

## 4.2 Adopted Screening Criteria

Guidance documents used to assess the dataset include the following:

- Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan 2.0*. January 2020.
- Department of Health, 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. April 2017.
- FSANZ, 2017. *Supporting Document 1: Hazard assessment report – Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS)*.
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
- National Environment Protection Council (NEPC), 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 6** below. It is noted that, at the time of preparing this report, the PFAS NEMP (HEPA, 2020) did not provide any screening criteria for PFAS in sediments.

**Table 6 Summary of Adopted Screening Criteria: Water**

Media	Pathway	Compound	Criteria	Comment/Reference
<b>Human Health Receptors</b>				
Water – Groundwater and Surface Water	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the Tolerable Daily Intake (TDI) for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2011 (updated in January 2022) to determine drinking water values.
		PFOA	0.56 µg/L	For PFHxS, DoH 2017 noted that 'FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily

Media	Pathway	Compound	Criteria	Comment/Reference
				<p><i>intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS.</i></p> <p><i>All groundwater and surface water results were compared to these criteria.</i></p>
Water – Surface Water	Recreational use	PFOS + PFHxS	2 µg/L	<p>In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events/year) to calculate an annual ingestion rate of 30 L per year. These values were adopted in the PFAS NEMP, 2020.</p> <p><i>All surface water results were compared to these criteria.</i></p>
		PFOA	10 µg/L	
<b>Ecological Receptors</b>				
Water – Groundwater and Surface Water	Freshwater	PFOS	0.00023 µg/L	<p>The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality.</p> <p>The 99% species protection level (for freshwater and interim marine) has been applied for high value conservation systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.</p> <p><i>All groundwater and surface water results were compared to these criteria.</i></p>
		PFOA	19 µg/L	

### 4.3 Data Quality Objectives and Data Validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023). Data validation assessment is provided in **Appendix D**.

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

Following the reporting of PFAS concentrations which were first-time detections at MW271D, and first-time detections and new ecological criteria exceedance at MW230S, the primary laboratory was requested to repeat the analysis. The repeat analysis results were as follows:

- MW271D, no PFAS detections were reported
- MW230S, confirmed PFAS detections of some of the originally detected PFAS compounds.

Given the originally reported PFAS concentrations were at or close to the limit of reporting, and the primary laboratory did not identify any procedural or analytical errors pertaining to their analysis, the most conservative, originally reported concentrations have been retained and used in this report. Further details are provided in the data validation assessment in **Appendix D**.

All data collected during this event have been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) requirements.

## 5.0 Field Observations and Results

### 5.1 General Observations

The weather conditions and general observations (including activities that may impact the monitoring program) recorded during the November 2023 biannual sampling event completed between 20 and 28 November 2023, are summarised in **Table 7** below.

**Table 7** General Observations

Items	Observations
Weather Conditions	<p>During the sampling event, the weather was observed to be mostly dry and warm, with maximum daily temperatures between 24.4°C (28 November 2023) and 26.7 °C (27 November 2023).</p> <p>A cumulative 8 mm of rainfall was recorded at Williamstown (Williamstown RAAF, Station 061078) (Bureau of Meteorology, 2023) during the sampling event with most of the rainfall recorded on 24 November 2023 (5.4 mm).</p>
Estate Management Works, Training Activities and/or Construction Works.	<p>During the November 2023 sampling event, monitoring wells MW209S and MW209D could not be accessed due to the presence of soil stockpiles over the wells, located in the Northeast Landfill area.</p> <p>AECOM received advice that there would be considerable airside activity associated with the removal of Air Show related infrastructure on 20 November 2023, so access to the Site was avoided that day.</p>

### 5.2 Field Observations and Measurements

The observations and measurements recorded during the field activities for the November 2023 biannual sampling event are summarised in **Table 8**, below.

**Table 8** Field Observations and Measurements

Item	Description
Monitoring Well Network Condition	<p>All wells sampled were observed to be in good condition with the exception of the following:</p> <ul style="list-style-type: none"> <li>MW209S and MW209D were unable to be accessed as the wells were buried beneath soil stockpiles. AECOM will attempt to locate/access these wells during the next scheduled sampling event.</li> <li>MW108S and MW433 had missing J-caps (well plugs), which were replaced at the time of sampling. Given the gatic lids were secured, water ingress into the wells was unlikely, with no water observed in the well gatic at time of sampling.</li> <li>MW146S had a missing gatic lid and J-cap, which were both replaced at the time of sampling, however water ingress into the well was possible. The impact of potential water ingress is likely to be minimal given that concentrations in this well were consistent with historical results (&lt;LOR). A dropped HydraSleeve™ was retrieved from the base of the well and was observed to be in good condition for sampling, with no accumulated sediment collected in the HydraSleeve™.</li> <li>MW118 was damaged and blocked at 0.970 mbTOC. A dropped HydraSleeve™ was retrieved from the base of the well, unblocking the well, and a new HydraSleeve™ was installed.</li> </ul>

Item	Description
	<ul style="list-style-type: none"> <li>MW107S, MW107D, MW166 and MW280S had sediment or roots in well gatics above top of casing. The sediment and roots were removed prior to sampling at these locations and sediment was only observed in the base of the Hydrasleeve™ at MW280S. Given the J-caps were secure, debris or sediment ingress into the wells was unlikely.</li> <li>MW198 was missing a gatic lid. AECOM will replace the gatic lid during the next scheduled sampling event. Given the J-cap was secured, water ingress into the well was unlikely, with no water observed in the well gatic at time of sampling.</li> <li>MW179D, MW212 and MW247D had water in well gatics below top of casing. The water was removed prior to sampling at each location. Given the J-caps were secure, water ingress into the wells was unlikely.</li> <li>MW208 and MW268D may be blocked based on gauged depth to base of well and well construction details. AECOM did not observe any sediment on the interface probe to indicate build-up of silt at base of well. The gatic lid at MW268D was also observed to not sit flush.</li> </ul>
Water Observations	<p>No visible signs of contamination were observed in the groundwater and surface water locations sampled.</p> <p>Sulphurous odours were noted at 16 groundwater locations (refer to <b>Table T1</b> in <b>Appendix B</b>) and one surface water location (SW048). Organic odours were noted at 24 groundwater locations (refer to <b>Table T1</b> in <b>Appendix B</b>) and one surface water location (SW081). A septic odour was noted at one groundwater location (MW257D).</p>
Depth to Groundwater and Flow Direction	<p>Depth to groundwater ranged from 0.535 (MW108S) and 2.947 (MW132D) metres below top of casing (mbTOC). Groundwater elevation ranged between -0.615 (MW231S) and 7.717 (MW244D) metres Australian Height Datum (mAHD). Groundwater gauging data is presented in <b>Table T1</b> in <b>Appendix B</b>.</p> <p>The inferred groundwater flow direction is to the south and southeast, towards Tilligerry Creek and Fourteen Foot Drain, and is likely to the north and northeast, south of Tilligerry Creek, Fourteen Foot Drain and Ten Foot Drain (refer to <b>Figure F5-1</b> and <b>F5-2</b> in <b>Appendix A</b>), which was generally consistent with previous flow directions. Note that the groundwater elevation contours in <b>Figure F5-1</b> and <b>Figure F5-2</b> (in <b>Appendix A</b>) are based on the gauging of selected wells on 24 November 2023 to minimise the potential for temporal variability.</p>
Geochemical Parameters	<p>Groundwater and surface water geochemical parameters were measured during the collection of water samples. The readings are presented in <b>Table T2</b> and <b>Table T3</b> in <b>Appendix B</b> and are summarised below:</p> <p><b>Groundwater Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>Dissolved oxygen ranged from 0.43 mg/L (MW257D) to 5.87 mg/L (MW108S) indicating poor to well oxygenated conditions.</li> <li>Electrical conductivity ranged from 11.5 µS/cm (MW829) to 24,063 µS/cm (MW316D) indicating fresh to saline conditions.</li> <li>pH ranged from 3.29 (MW108S) to 7.87 (MW128S) indicating acidic to neutral conditions.</li> <li>Redox ranged from -47.6 mV (MW231D) to 464.6 mV (MW196) indicating reducing to oxidising conditions.</li> <li>Temperature ranged from 18.3°C (MW107S) to 24.6°C (MW271D).</li> </ul>

Item	Description
	<p><b>Surface Water Geochemical Parameters</b></p> <ul style="list-style-type: none"> <li>• Dissolved oxygen ranged from 1.59 mg/L (SW024) to 10.25 mg/L (SW079) indicating generally well oxygenated conditions.</li> <li>• Electrical conductivity ranged from 104.6 µS/cm (SW048) to 47,108 µS/cm (SW259) indicating fresh to saline conditions.</li> <li>• pH ranged from 5.55 (SW014) to 8.41 (SW079) indicating moderately acidic to moderately alkaline conditions.</li> <li>• Redox ranged from 125.3 mV (SW014) to 309.7 mV (SW081) indicating mildly reducing to oxidising conditions.</li> <li>• Temperature ranged from 21.2°C (SW014) to 29.3°C (SW011).</li> </ul>
Sediment Observations	<p>Sediment sampled and logged during this monitoring event comprised sand, silt and clay materials with minor inclusions of gravels and trace shell fragments, and varying amounts of organic material (roots, leaves, grass).</p> <p>Organic odours were noted in 3 sediment locations (SD254, SD255 and SD326).</p> <p>Refer to in <b>Table T4</b> in <b>Appendix B</b> for a summary of sediment classifications and observations.</p>

## 5.3 Summary of Analytical Results

### 5.3.1 Groundwater Analytical Results

The groundwater PFAS analytical results from this sampling event are presented in **Table T5** in **Appendix B**. In summary, 92 primary groundwater samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 49 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted human health screening criteria in 35 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 38 primary samples.

Deviations from the historical dataset are reported in **Table 9** and graphically on **Figure F6** in **Appendix A**.

**Table 9** Deviations from Historical Dataset: Groundwater

Deviation Type	Groundwater sampling location	PFOS+PFHxS (µg/L)		PFOA (µg/L)		PFOS (µg/L)	
		Nov 2023	Previous maximum	Nov 2023	Previous maximum	Nov 2023	Previous maximum
First-time detections of PFOS+PFHxS, PFOS and/or PFOA in groundwater	MW178	There were no first-time detections in the dataset.		0.01	<LOR	There were no first-time detections in the dataset.	
	MW230S	There were no first-time detections in the dataset.		There were no first-time detections in the dataset.		0.01	<LOR
	MW271D	0.01	<LOR	There were no first-time detections in the dataset.		There were no first-time detections in the dataset.	
New exceedance of the NEMP (HEPA, 2020) drinking water guidelines in groundwater	n/a	There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There were no new exceedances of the NEMP Human Health Screening Criteria in the dataset.		There are no applicable NEMP Human Health Screening Criteria.	
New exceedance of the NEMP (HEPA, 2020) Freshwater 99% guidelines in groundwater	MW230S	There are no applicable NEMP Ecological Screening Criteria (99%).		There were no new exceedances of the NEMP Ecological Screening Criteria in the dataset (99%).		0.01	<LOR
<b>Legend</b>							
Blue Shading	Blue shading indicates sampling location with first-time detection of PFOS+PFHxS, PFOS and/or PFOA						
Yellow Shading	Yellow shading indicates sampling location with new exceedance of NEMP Human Health and/or Ecological Screening Criteria						

### 5.3.2 Surface Water Analytical Results

The surface water PFAS analytical results from this sampling event are presented in **Table T6** in **Appendix B**. In summary, 21 primary surface water samples were analysed for PFAS compounds, with concentrations of:

- PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 21 primary samples

- PFOS+PFHxS and/or PFOA exceeded the adopted drinking water human health screening criteria in 16 primary samples
- PFOS+PFHxS and/or PFOA exceeded the adopted recreational use human health screening criteria in 5 primary samples
- PFOS and/or PFOA exceeded the adopted ecological screening criteria in 21 primary samples.

There were no first-time detections, or new exceedances of the adopted human health or ecological screening criteria for PFOS+PFHxS, PFOS and/or PFOA, in the surface water samples analysed.

### 5.3.3 Sediment Analytical Results

The sediment PFAS analytical results from this sampling event are presented in **Table T7** in **Appendix B**. In summary, 25 primary sediment samples were analysed for PFAS compounds, with concentrations of PFOS+PFHxS, PFOS and/or PFOA reported above laboratory LOR in 25 primary samples.

There were no first-time detections for PFOS+PFHxS, PFOS and/or PFOA, in the sediment samples analysed.

## 5.4 Historical Sampling Data

Historical groundwater, surface water and sediment sampling data are presented in **Table T8**, **Table T9** and **Table T10** (respectively) in **Appendix B**.



## 6.0 Summary and Next Sampling Events

### 6.1 Summary of Monitoring Event

The November 2023 biannual sampling event was completed between 20 and 28 November 2023. The findings and the recommended actions are summarised in **Table 10** below.

**Table 10 Summary of Sampling Event**

Item	Comment	Recommended Action
Access to sampling locations	The following were accessed and able to be sampled: <ul style="list-style-type: none"> <li>92 groundwater locations</li> <li>21 surface water locations</li> <li>25 sediment locations</li> </ul>	Nil.
Locations unable to be located, inaccessible or dry	Two monitoring wells (MW209S and MW209D) were covered by a stockpile of soil. One surface water location (SW006) was dry and unable to be sampled.	AECOM will attempt to sample MW209S, MW209D and SW006 during the next scheduled sampling event.
Monitoring well network condition	The monitoring wells that were able to be accessed and sampled were noted to be in good condition, with the exception of the following observed at some locations: <ul style="list-style-type: none"> <li>damaged well gatics or missing/damaged gatic lids (MW146S, MW198 and MW268D)</li> <li>blockages/obstructions (MW118, MW208 and MW268D)</li> <li>had missing or unsecured J-caps (MW108S, MW146S and MW433)</li> <li>water in the well gatic below top of casing (MW179D, MW212 and MW247D)</li> <li>soil and roots in well gatic (MW107S, MW107D, MW166 and MW280S)</li> </ul>	AECOM will attempt to complete the following during the next scheduled sampling event: <ul style="list-style-type: none"> <li>replace missing gatic lids for MW198</li> <li>unblock/remove obstructions from monitoring wells MW208 and MW268D</li> </ul> All other monitoring well condition concerns were addressed during this sampling event.
Analytical Results	92 groundwater primary samples, 21 surface water primary samples and 25 sediment primary samples were analysed.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
First-time detections of PFOS+PFHxS, PFOS and/or PFOA	Three (MW178, MW230S and MW271D) of the 92 groundwater locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.  No surface water locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.  No sediment locations sampled reported first-time detections of PFOS+PFHxS, PFOS and/or PFOA.	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

Item	Comment	Recommended Action
New exceedance of adopted human health screening criteria	<p>No groundwater locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p> <p>No surface water locations sampled reported new exceedances of the adopted human health screening criteria for PFOS+PFHxS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.
New exceedance of adopted ecological screening criteria	<p>One (MW230S) of the 92 groundwater locations sampled reported a new exceedance of the adopted ecological screening criteria for PFOS and/or PFOA.</p> <p>No surface water locations sampled reported new exceedances of the adopted ecological screening criteria for PFOS and/or PFOA.</p>	Locations will be sampled again during the next scheduled sampling event to continue to monitor concentrations over time.

## 6.2 Upcoming Sampling Events

The next OMP sampling event is scheduled for May 2024.

## 6.3 Upcoming Ongoing Monitoring Report

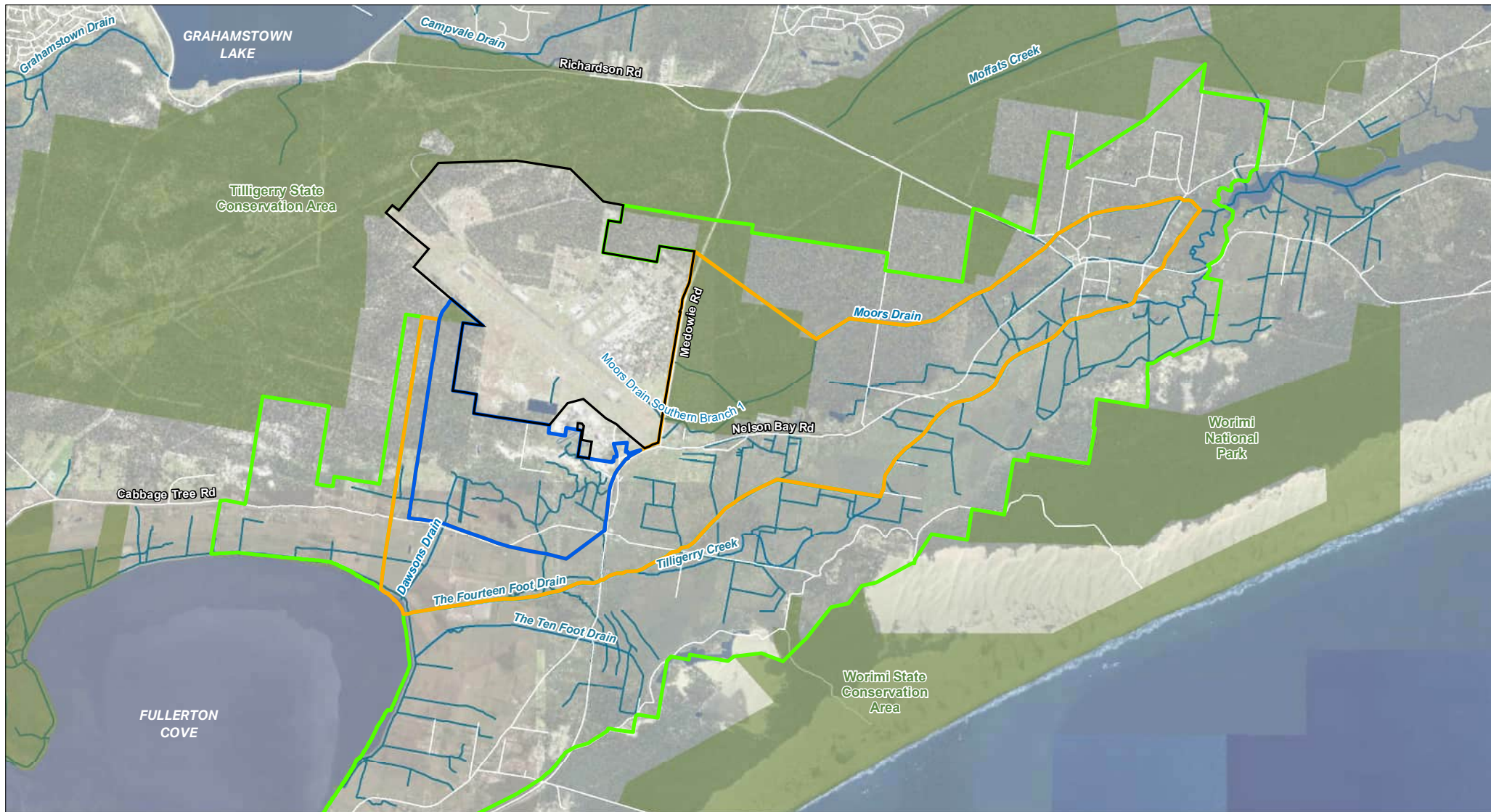
The next Ongoing Monitoring Report is scheduled to be delivered in **Q1 2024**, which will cover a consolidated dataset inclusive of the sampling conducted between July 2021 and 2023.

## 7.0 References

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- National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water*. August 2019.
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- NEPC, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.
- NEPC, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.
- NEPC, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.
- Standards Australia (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*
- Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling*







# Appendix A

Figures



**FIGURE F1: SITE LAYOUT**

Legend

-  RAAF Base Williamtown
-  Primary Management Zone
-  Secondary Management Zone
-  Broader Management Zone
-  NPWS Reserve
-  Waterway



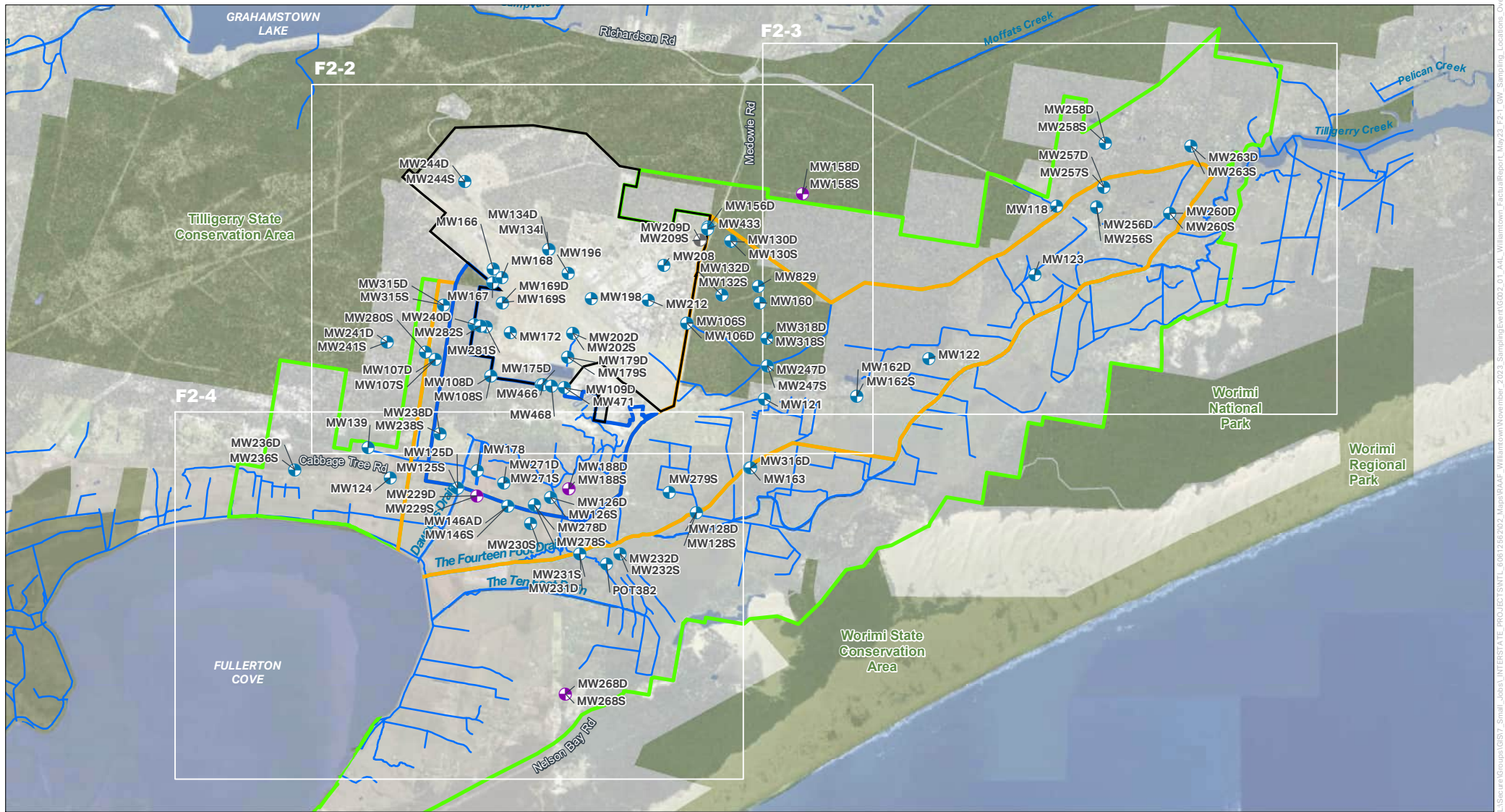
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 PFAS OMP  
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 60612562  
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**FIGURE F2-1: GROUNDWATER SAMPLING LOCATIONS OVERVIEW**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- ~ Waterway
- Groundwater Location (sampled)
- Groundwater Location (gauged)
- Groundwater Location (not sampled)



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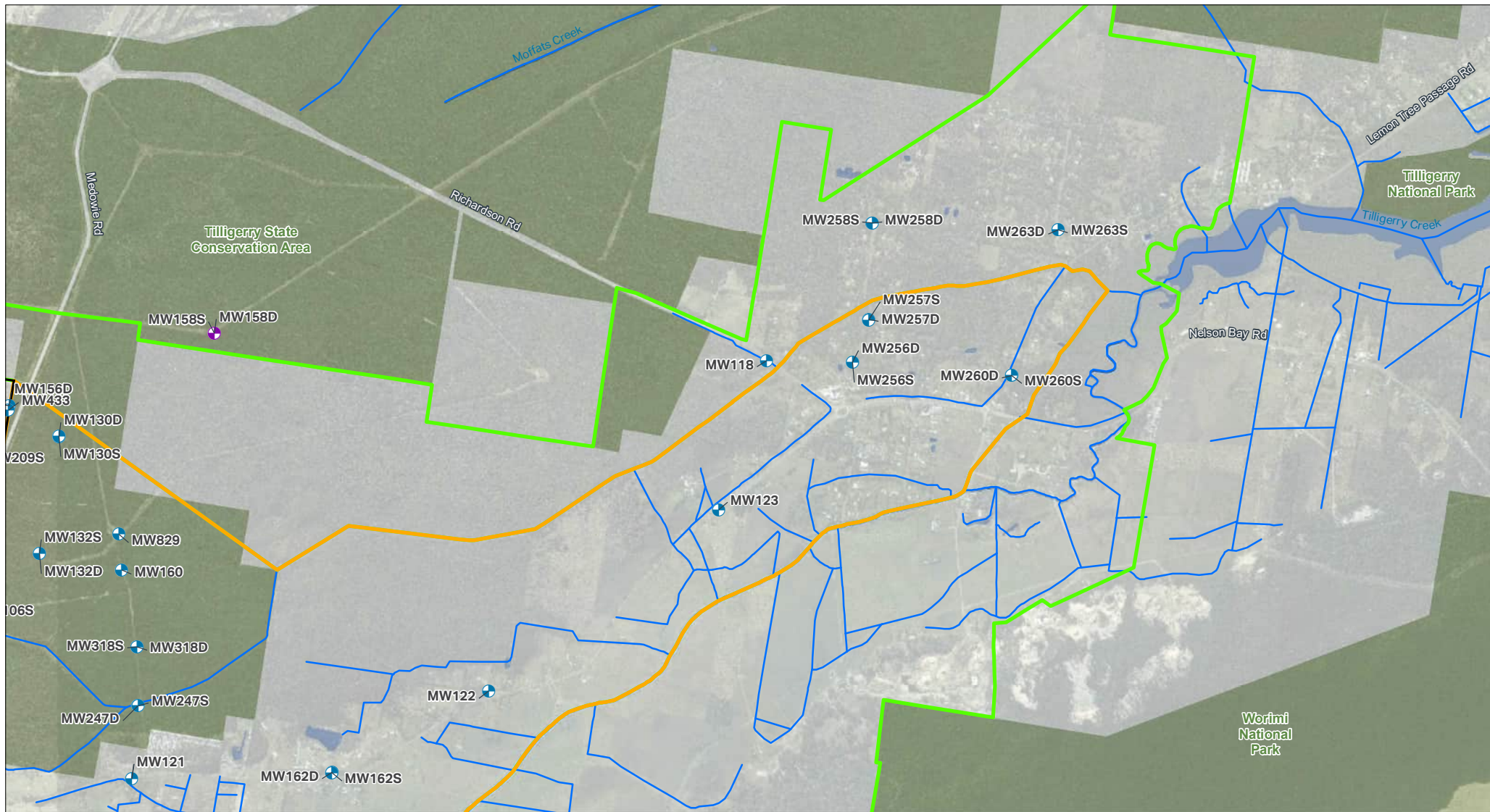
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**FIGURE F2-3: GROUNDWATER SAMPLING LOCATIONS - EAST**

Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- ~ Waterway
- Groundwater Location (sampled)
- ⊕ Groundwater Location (gauged)
- ⊙ Groundwater Location (not sampled)



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**FIGURE F3: SURFACE WATER SAMPLING LOCATIONS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- Surface Water Location (sampled)
- Surface Water Location (not sampled)



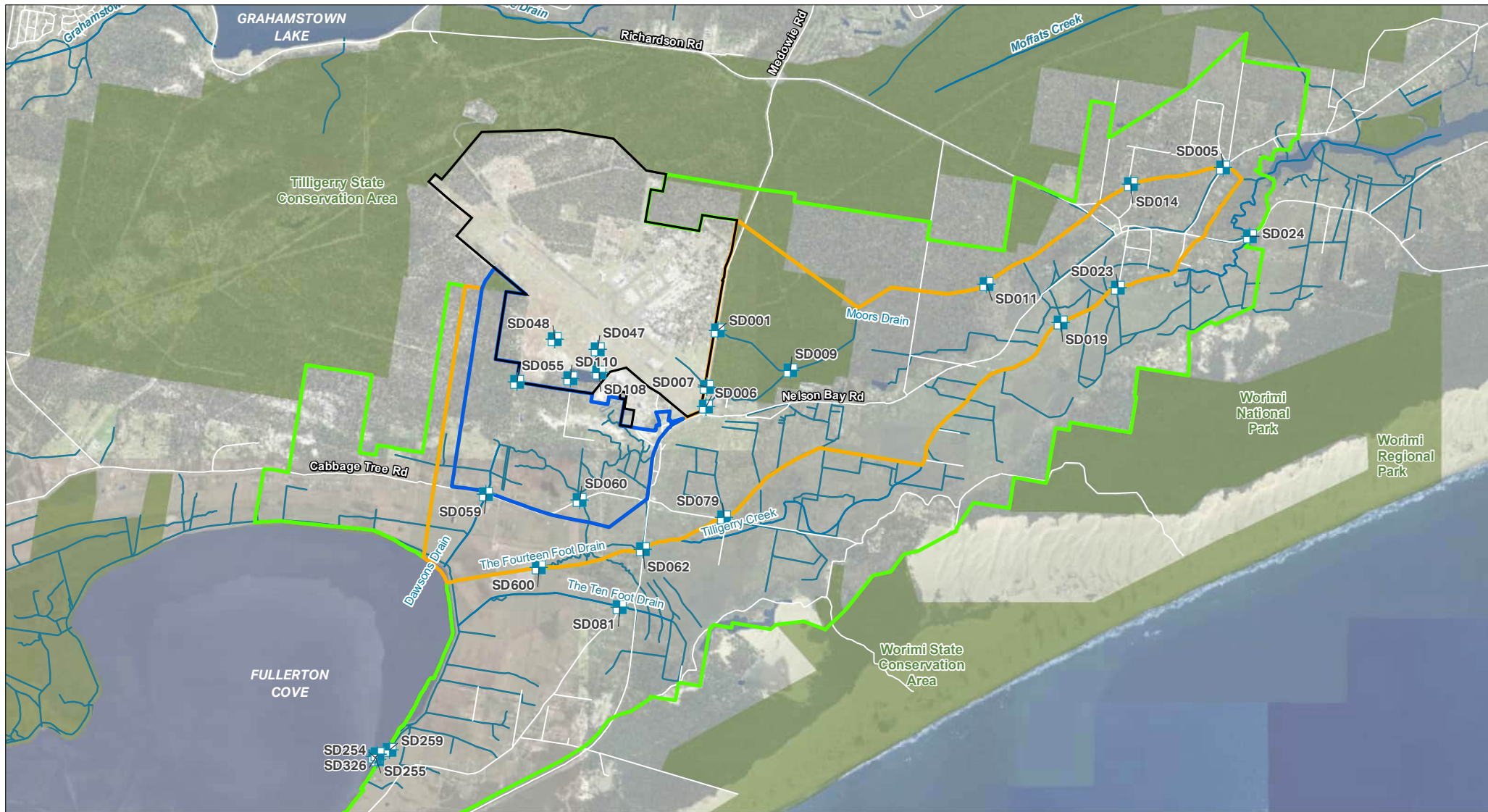
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**FIGURE F4: SEDIMENT SAMPLING LOCATIONS**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Waterway
- + Sediment Location (sampled)

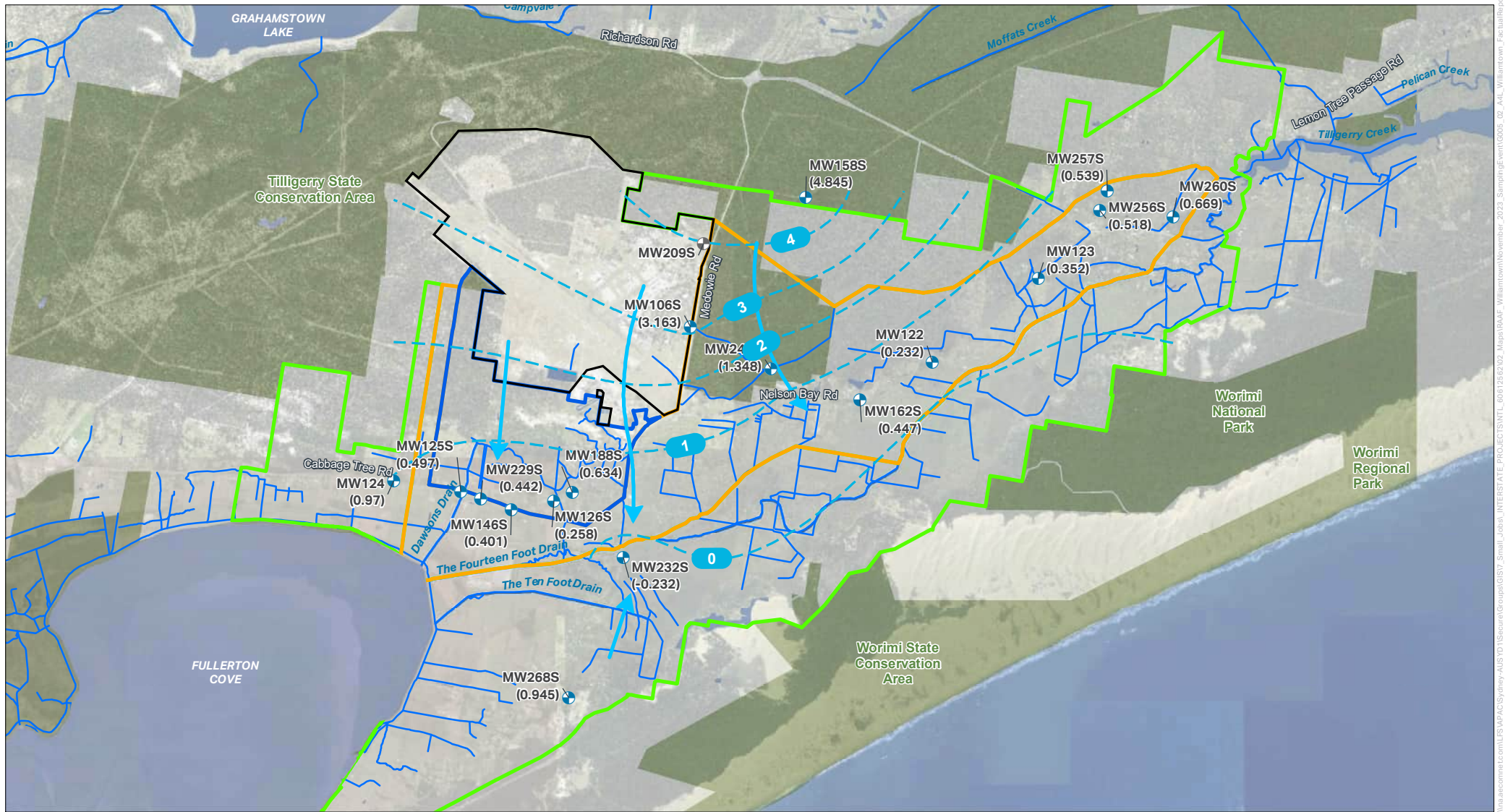


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**FIGURE F5-1: GROUNDWATER ELEVATION PLAN - SHALLOW**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- Inferred Groundwater Flow Direction
- Groundwater elevation Contour (Shallow Wells; mAHD)
- Waterway



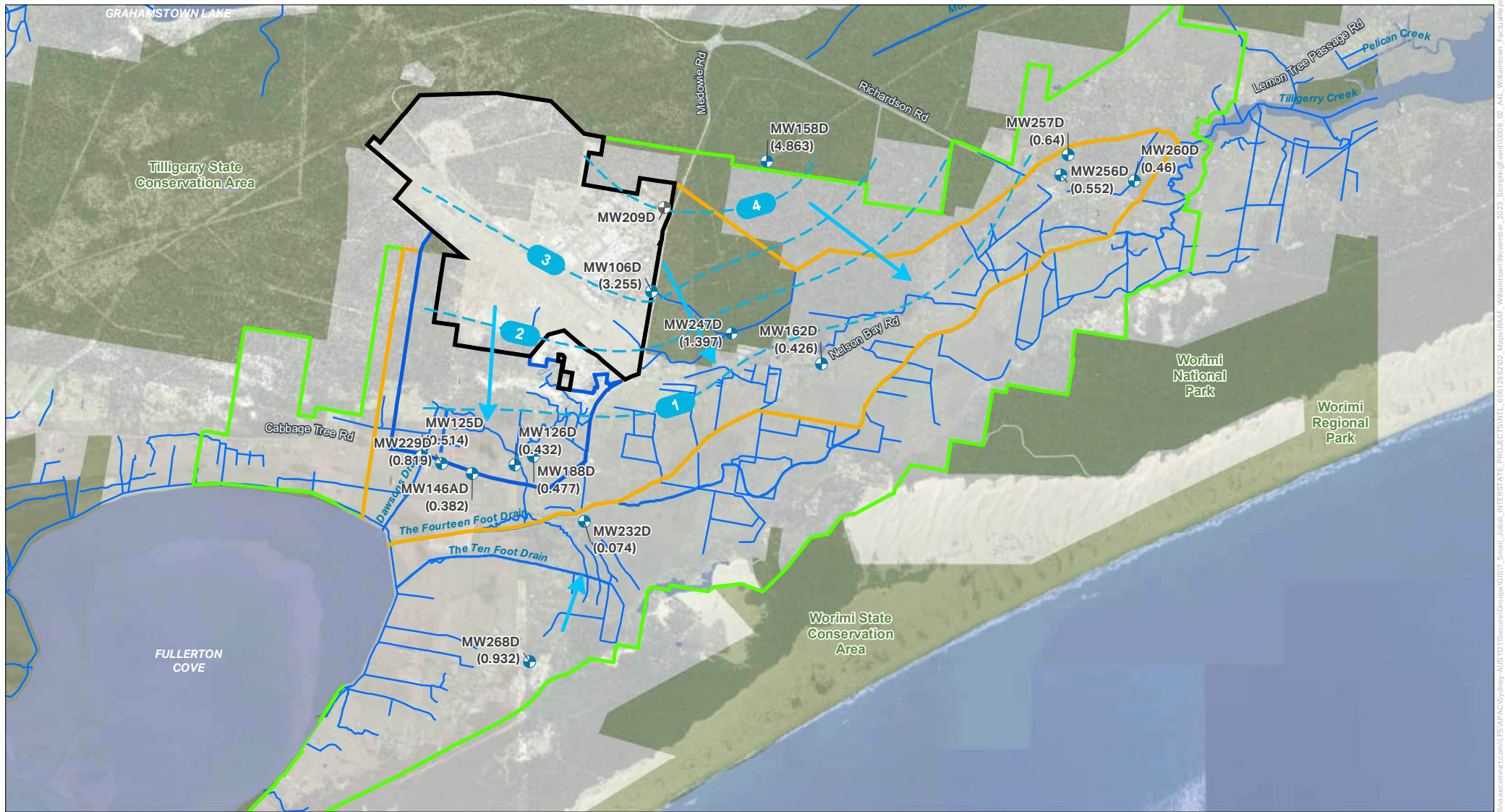
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**FIGURE F5-2: GROUNDWATER ELEVATION PLAN - DEEP**

**Legend**

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Mangement Zone
- Waterway
- Groundwater Location (gauged)
- ➔ Inferred Groundwater Flow Direction
- Groundwater Elevation Contour (Deep Wells; mAH)



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# Appendix B

Tables



Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW106D	MW106_D	4.770	18.5	20	18.5	23/11/2023 8:25	1.529	3.241	19.52	Good condition. Ants nest inside gatic.
MW106D	MW106_D	4.770	18.5	20	18.5	24/11/2023 7:54	1.515	3.255	19.52	Good condition. Targeted gauging round.
MW106S	MW106_S	4.678	3.5	5	4.0	23/11/2023 8:20	1.325	3.353	3.99	Good condition.
MW106S	MW106_S	4.678	3.5	5	4.0	24/11/2023 7:58	1.515	3.163	4.01	Good condition. Targeted gauging round.
MW107D	MW107_D	3.362	18.5	20	18.5	23/11/2023 10:42	0.678	2.684	19.92	Good condition, sediment in gatic above TOC.
MW107S	MW107_S	3.322	2.0	5	3.0	23/11/2023 10:45	0.634	2.688	4.78	Good condition, sediment in gatic above TOC.
MW108D	MW108_D	3.080	18.5	20	18.5	22/11/2023 14:15	0.650	2.430	19.60	Good condition.
MW108S	MW108_S	2.950	2.0	5	3.0	22/11/2023 14:00	0.535	2.415	4.35	Good condition. J-cap missing and replaced.
MW109D	MW109_D	3.157	18.5	20	18.0	22/11/2023 14:43	0.293	2.864	18.89	Good condition.
MW118	MW118	1.674	4.5	6	n/a	20/11/2023 13:58	0.765	0.909	-	Poor condition, well blocked. No Hydrasleeve in well. Well blocked at 0.97 m. To return to unblock.
MW118	MW118	1.674	4.5	6	n/a	27/11/2023 10:50	0.890	0.784	5.90	Good condition. Hydrasleeve retrieved. To return to install, after sediments settle.
MW118	MW118	1.674	4.5	6	4.5	27/11/2023 15:27	-	n/a	-	New Hydrasleeve installed. To return to sample.
MW118	MW118	1.674	4.5	6	4.5	28/11/2023 10:23	0.824	0.850	5.87	Good condition.
MW121	MW121	1.589	4.5	6	4.8	20/11/2023 14:53	0.751	0.838	5.97	Good condition.
MW122	MW122	1.851	5.5	7	6.0	21/11/2023 10:52	1.620	0.231	6.96	Good condition.
MW122	MW122	1.851	5.5	7	6.0	24/11/2023 9:22	1.619	0.232	6.91	Good condition. Targeted gauging round.
MW123	MW123	1.524	4.5	6	4.8	21/11/2023 13:02	1.164	0.360	5.95	Good condition.
MW123	MW123	1.524	4.5	6	4.8	24/11/2023 9:10	1.172	0.352	5.97	Good condition. Targeted gauging round.
MW124	MW124	2.420	6.0	7.5	6.5	21/11/2023 14:20	1.447	0.973	7.38	Good condition. Ants nest inside gatic.
MW124	MW124	2.420	6.0	7.5	6.5	24/11/2023 10:42	1.450	0.970	7.38	Good condition. Targeted gauging round.
MW125D	MW125_D	2.173	18.5	20	19.3	21/11/2023 15:10	1.652	0.521	20.26	Good condition.
MW125D	MW125_D	2.173	18.5	20	19.3	24/11/2023 10:32	1.659	0.514	20.25	Good condition. Targeted gauging round.
MW125S	MW125_S	2.197	6.0	7.5	6.5	21/11/2023 14:55	1.690	0.507	7.48	Good condition.
MW125S	MW125_S	2.197	6.0	7.5	6.5	24/11/2023 10:36	1.700	0.497	7.49	Good condition. Targeted gauging round.
MW126D	MW126_D	1.794	18.5	20	19.5	23/11/2023 10:07	1.360	0.434	20.30	Good condition.
MW126D	MW126_D	1.794	18.5	20	19.5	24/11/2023 9:10	1.362	0.432	20.30	Good condition. Targeted gauging round.
MW126S	MW126_S	1.790	5.5	7	5.5	23/11/2023 9:56	1.355	0.435	6.55	Good condition.
MW126S	MW126_S	1.790	5.5	7	5.5	24/11/2023 9:11	1.532	0.258	6.55	Good condition. Targeted gauging round.
MW128D	MW128_D	0.843	9.3	10.3	n/a	21/11/2023 13:00	n/a	n/a	n/a	Unable to locate, grass overgrown.
MW128D	MW128_D	0.843	9.3	10.3	9.5	28/11/2023 10:43	0.659	0.184	10.44	Good condition.
MW128S	MW128_S	0.909	4.7	6.2	n/a	21/11/2023 13:10	n/a	n/a	n/a	Unable to locate, grass overgrown.
MW128S	MW128_S	0.909	4.7	6.2	5.0	28/11/2023 10:53	1.238	-0.329	6.15	Good condition.
MW130D	MW130_D	5.858	15.0	16.5	15.0	27/11/2023 12:28	1.103	4.755	16.48	Good condition.
MW130S	MW130_S	5.794	1.0	4	2.5	27/11/2023 12:24	1.046	4.748	3.83	Good condition.
MW132D	MW132_D	6.138	15.0	16.5	15.0	23/11/2023 14:03	2.947	3.191	16.10	Good condition.
MW132S	MW132_S	6.082	3.0	6	4.0	23/11/2023 14:16	2.805	3.277	9.78	Good condition. Ants nest inside gatic.
MW134D	MW134_D	8.750	18.5	20	18.8	22/11/2023 10:35	2.549	6.201	20.11	Good condition.
MW134I	MW134_I	8.710	10.0	11.5	10.3	22/11/2023 10:28	2.508	6.202	11.47	Good condition.
MW139	MW139	1.986	1.0	4	2.5	27/11/2023 10:53	0.665	1.321	3.88	Good condition.
MW146AD	MW146D_A	1.620	18.5	20	19.0	23/11/2023 11:08	1.247	0.373	20.15	Good condition.
MW146AD	MW146D_A	1.620	18.5	20	19.0	24/11/2023 9:26	1.238	0.382	20.15	Good condition. Targeted gauging round.
MW146S	MW146_S	1.802	0.8	3.8	2.0	24/11/2023 9:33	1.401	0.401	3.78	Missing gatic lid and J-cap, potential surface water ingress. Gatic lid and J cap replaced. Targeted gauging round and sampling. Hydrasleeve retrieved from base of well and in good condition.
MW156D	MW156_D	7.340	19.5	21	19.5	23/11/2023 9:14	1.944	5.396	21.65	Good condition.
MW158D	MW158_D	6.193	18.5	20	-	24/11/2023 10:38	1.330	4.863	20.25	Good condition. Targeted gauging round.
MW158S	MW158_S	6.260	1.0	4	-	24/11/2023 10:44	1.415	4.845	3.80	Good condition. Targeted gauging round.
MW160	MW160	4.212	1.0	4	2.5	23/11/2023 13:11	1.750	2.462	4.00	Good condition.
MW162D	MW162_D	2.876	18.6	20.1	19.3	21/11/2023 10:12	2.435	0.441	20.25	Good condition.
MW162D	MW162_D	2.876	18.6	20.1	19.3	24/11/2023 10:00	2.450	0.426	20.17	Good condition. Targeted gauging round.
MW162S	MW162_S	2.838	1.5	4.5	2.5	21/11/2023 10:24	2.327	0.511	4.22	Good condition.
MW162S	MW162_S	2.838	1.5	4.5	2.5	24/11/2023 9:54	2.391	0.447	3.21	Good condition. Targeted gauging round.
MW163	MW163	1.207	0.5	3.5	n/a	21/11/2023 12:25	n/a	n/a	n/a	Unable to locate, grass overgrown.
MW163	MW163	1.207	0.5	3.5	2.5	28/11/2023 12:05	1.504	-0.297	4.10	Good condition.
MW166	MW166	7.100	0.8	3.8	2.5	22/11/2023 10:15	1.632	5.468	3.67	Good condition, roots in gatic above TOC.
MW167	MW167	7.190	0.7	3.7	2.5	22/11/2023 10:36	2.550	4.640	4.30	Good condition.
MW168	MW168	6.780	0.7	3.7	2.5	22/11/2023 10:28	1.712	5.068	3.43	Good condition.
MW169D	MW169_D	5.800	18.0	19.5	18.5	22/11/2023 10:50	1.225	4.575	19.32	Good condition.
MW169S	MW169_S	5.830	0.7	3.7	2.5	22/11/2023 11:04	1.240	4.590	3.69	Good condition.
MW172	MW172	4.880	0.7	3.7	2.5	22/11/2023 11:28	0.932	3.948	3.34	Good condition.
MW175D	MW175_D	4.110	19.5	21.5	20.3	22/11/2023 14:28	1.465	2.645	21.47	Good condition.
MW178	MW178	1.760	1.2	4.2	2.5	21/11/2023 14:35	1.135	0.625	4.22	Good condition.
MW179D	MW179_D	4.760	18.5	20	18.8	22/11/2023 11:47	1.054	3.706	19.50	Good condition. Gatic box full of water, below TOC.
MW179S	MW179_S	4.710	0.8	3.8	2.5	22/11/2023 11:54	1.032	3.678	3.70	Good condition.
MW188D	MW188_D	1.354	18.5	20	-	24/11/2023 8:20	0.877	0.477	19.98	Good condition. Buried under 5 cm of soil. Targeted gauging round.
MW188S	MW188_S	1.439	0.8	3.8	-	24/11/2023 8:33	0.805	0.634	3.80	Good condition. Buried under 5 cm of soil. Targeted gauging round.
MW196	MW196	6.760	0.8	3.8	2.5	22/11/2023 9:10	1.292	5.468	3.73	Good condition.
MW198	MW198	6.110	0.8	3.8	2.5	22/11/2023 9:25	1.738	4.372	3.80	Gatic lid missing. To be replaced.
MW202D	MW202_D	5.170	19.5	21	n/a	22/11/2023 11:14	n/a	n/a	n/a	Under parked truck. Requested to be moved for later visit.
MW202D	MW202_D	5.170	19.5	21	19.5	22/11/2023 11:38	1.447	3.723	20.70	Good condition.
MW202S	MW202_S	5.210	0.8	3.8	2.5	22/11/2023 11:12	1.482	3.728	3.70	Good condition.
MW208	MW208	6.990	1.2	4.2	2.0	23/11/2023 8:59	2.225	4.765	3.08	Good condition. Possibly blocked. No Hydrasleeve in well, new Hydrasleeve installed. To return to sample.
MW208	MW208	6.990	1.2	4.2	2.0	23/11/2023 13:32	2.220	4.770	3.14	Good condition. Possibly blocked.
MW209D	MW209_D	6.530	18.0	19.5	n/a	24/11/2023 8:10	n/a	n/a	n/a	Unable to access due to well located beneath stockpiled material.
MW209S	MW209_S	6.470	0.6	3.6	n/a	24/11/2023 8:15	n/a	n/a	n/a	Unable to access due to well located beneath stockpiled material.
MW212	MW212	6.040	1.2	4.2	3.0	23/11/2023 8:40	2.000	4.040	4.12	Good condition. Gatic box full of water, below TOC.
MW229D	MW229_D	1.920	18.5	20	-	24/11/2023 10:17	1.101	0.819	20.23	Good condition. Targeted gauging round.



Table T1 - Groundwater Gauging and Observations

Location Code	Alternative Name	Top of Casing (mAHD)	Top Screen (mbTOC)	Bottom Screen (mbTOC)	HydraSleeve Collar Depth (mbTOC)	Visit / Gauging Date Time	Water Depth (mbTOC)	Water Elevation (mAHD)	Depth to Base of Well (mbTOC)	Visit / Gauging Comment
MW229S	MW229_S	1.910	1.0	4	-	24/11/2023 10:20	1.468	0.442	4.00	Good condition. Targeted gauging round.
MW230S	MW230_S	0.939	2.5	4	3.0	27/11/2023 14:34	0.805	0.134	4.00	Good condition. Hydrasleeve color depth 3 m.
MW231D	MW231_D	0.571	16.0	17.5	16.0	28/11/2023 8:35	0.557	0.014	17.60	Good condition. DTW measured after removing Hydrasleeve.
MW231S	MW231_S	0.625	1.0	4	2.5	28/11/2023 8:25	1.240	-0.615	3.99	Good condition.
MW232D	MW232_D	1.324	18.5	20	n/a	23/11/2023 12:30	n/a	n/a	n/a	Unable to access.
MW232D	MW232_D	1.324	18.5	20	19.0	24/11/2023 7:50	1.250	0.074	21.00	Good condition. Targeted gauging round.
MW232D	MW232_D	1.324	18.5	20	19.0	24/11/2023 7:51	1.250	0.074	21.00	Good condition.
MW232S	MW232_S	1.148	1.0	4	n/a	23/11/2023 12:30	n/a	n/a	n/a	Unable to access.
MW232S	MW232_S	1.148	1.0	4	2.0	24/11/2023 7:46	1.380	-0.232	4.60	Good condition. Targeted gauging round.
MW232S	MW232_S	1.148	1.0	4	2.0	24/11/2023 7:48	1.380	-0.232	4.60	Good condition.
MW236D	MW236_D	2.715	18.5	20	18.5	27/11/2023 13:41	1.360	1.355	20.25	Good condition.
MW236S	MW236_S	2.707	1.0	4	2.5	27/11/2023 13:50	1.349	1.358	3.94	Good condition.
MW238D	MW238_D	2.211	18.5	20	18.5	27/11/2023 13:04	1.123	1.088	20.33	Good condition.
MW238S	MW238_S	2.270	1.0	4	2.5	27/11/2023 13:11	1.250	1.020	4.05	Good condition.
MW240D	MW240_D	5.742	18.5	20	18.8	22/11/2023 13:40	1.784	3.958	20.25	Good condition.
MW241D	MW241_D	5.449	18.5	20	18.8	23/11/2023 8:42	1.938	3.511	20.20	Good condition.
MW241S	MW241_S	5.559	1.0	4	2.3	23/11/2023 9:00	1.999	3.560	3.20	Good condition.
MW244D	MW244_D	9.457	18.5	20	18.5	22/11/2023 8:30	1.740	7.717	20.96	Good condition.
MW244S	MW244_S	9.603	1.0	4	2.5	22/11/2023 8:36	1.897	7.706	4.98	Good condition.
MW247D	MW247_D	2.529	18.5	20	19.0	24/11/2023 11:19	1.132	1.397	20.28	Good condition. Targeted gauging round and sampling. Gatic box full of water, below TOC.
MW247S	MW247_S	2.468	1.0	4	2.8	24/11/2023 11:05	1.120	1.348	3.86	Good condition. Targeted gauging round and sampling.
MW256D	MW256_D	1.534	18.5	20	18.5	21/11/2023 13:25	0.965	0.569	20.32	Good condition.
MW256D	MW256_D	1.534	18.5	20	18.5	24/11/2023 8:37	0.982	0.552	20.32	Good condition. Targeted gauging round.
MW256S	MW256_S	1.518	1.0	4	3.0	21/11/2023 13:25	0.986	0.532	3.99	Good condition.
MW256S	MW256_S	1.518	1.0	4	3.0	24/11/2023 8:33	1.000	0.518	3.98	Good condition. Targeted gauging round.
MW257D	MW257_D	1.819	18.5	20	18.5	21/11/2023 14:05	1.215	0.604	20.19	Good condition.
MW257D	MW257_D	1.819	18.5	20	18.5	24/11/2023 8:45	1.179	0.640	20.19	Good condition. Targeted gauging round.
MW257S	MW257_S	1.639	1.0	4	2.5	21/11/2023 13:50	1.123	0.516	3.80	Good condition.
MW257S	MW257_S	1.639	1.0	4	2.5	24/11/2023 8:42	1.100	0.539	3.82	Good condition. Targeted gauging round.
MW258D	MW258_D	2.903	18.5	20	18.8	20/11/2023 13:29	1.297	1.606	20.10	Good condition.
MW258S	MW258_S	2.916	1.0	4	1.5	20/11/2023 13:37	1.254	1.662	3.94	Good condition.
MW260D	MW260_D	2.080	18.5	20	18.8	21/11/2023 14:45	1.607	0.473	20.23	Good condition.
MW260D	MW260_D	2.080	18.5	20	18.8	24/11/2023 8:57	1.620	0.460	20.25	Good condition. Targeted gauging round.
MW260S	MW260_S	2.124	1.0	4	2.5	21/11/2023 14:33	1.438	0.686	3.92	Good condition.
MW260S	MW260_S	2.124	1.0	4	2.5	24/11/2023 9:01	1.455	0.669	3.64	Good condition. Targeted gauging round.
MW263D	MW263_D	1.314	18.5	20	18.8	20/11/2023 13:02	0.681	0.633	-	Good condition.
MW263S	MW263_S	1.328	1.0	4	1.5	20/11/2023 12:50	0.672	0.656	3.93	Good condition.
MW268D	MW268_D	3.362	18.5	20	17.5	24/11/2023 10:18	2.430	0.932	18.61	Good condition. Gatic lid doesn't sit flush. Targeted gauging round. Possible blockage in well.
MW268S	MW268_S	3.232	2.0	5	4.0	24/11/2023 10:22	2.287	0.945	4.99	Good condition. Targeted gauging round. Light grey sediment on interface probe.
MW271D	MW271_D	1.308	18.5	20	18.5	27/11/2023 11:38	0.820	0.488	20.40	Good condition.
MW271S	MW271_S	1.316	1.0	4	2.0	27/11/2023 11:48	0.835	0.481	3.98	Good condition.
MW278D	MW278_D	1.289	18.5	20	18.8	21/11/2023 15:34	0.842	0.447	20.23	Good condition.
MW278S	MW278_S	1.253	1.5	3	1.8	21/11/2023 15:41	0.825	0.428	3.00	Good condition.
MW279S	MW279_S	1.295	0.8	3.8	2.5	21/11/2023 13:40	1.422	-0.127	4.61	Good condition.
MW280S	MW280S_LT, MW280_S	3.831	1.0	4	2.5	23/11/2023 9:35	0.868	2.963	3.88	Good condition, sediment in gatic above TOC.
MW281S	MW281_S	5.290	1.0	4	3.0	22/11/2023 13:45	1.410	3.880	3.99	Good condition.
MW282S	MW282_S	5.370	1.0	4	2.5	22/11/2023 13:35	1.310	4.060	3.52	Good condition.
MW315D	MW315_D/MW320D	6.160	18.0	20	18.8	23/11/2023 11:21	1.518	4.642	20.42	Good condition.
MW315S	MW315_S/MW320S	6.180	1.0	4	2.5	23/11/2023 11:15	1.549	4.631	-	Good condition.
MW316D	MW316_D/MW319D	1.200	18.0	20	18.0	21/11/2023 12:19	1.130	0.070	21.09	Good condition.
MW318D	MW318_D	2.630	18.5	20	18.8	23/11/2023 13:29	0.965	1.665	20.25	Good condition.
MW318S	MW318_S	2.670	1.0	4	2.5	23/11/2023 13:33	1.027	1.643	3.89	Good condition.
MW433	W33	6.926	unknown	unknown	2.5	23/11/2023 9:30	1.808	5.118	3.44	Good condition. J-cap missing and replaced.
MW466	W66	4.320	unknown	unknown	2.0	22/11/2023 14:19	1.914	2.406	3.23	Good condition.
MW468	W68	4.020	unknown	unknown	3.0	22/11/2023 14:30	1.547	2.473	4.03	Good condition.
MW829	PS9_BORE 30, MW652	n/a	n/a	n/a	n/a	23/11/2023 12:59	2.902	n/a	11.97	Good condition.
POT382		n/a	n/a	n/a	n/a	28/11/2023 8:15	n/a	n/a	n/a	Residential bore tap.

**Notes**  
mbTOC meters below Top of Casing  
mAHD meters Australian Height Datum  
n/a Not applicable  
- Not measured

Table T2 - Groundwater Quality Parameters and Observations

Location Code	Sampled Date Time	Sample Comment	Water Quality Parameters					
			Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW106D	23/11/2023 8:26	Light brown, low turbidity, sulfurous odour, no sheen.	1.46	20.1	150.0	5.70	-25.4	180.4
MW106S	23/11/2023 8:21	Clear, low turbidity, organic odour, no sheen.	1.18	19.3	216.6	5.90	-33.8	172.0
MW107D	23/11/2023 10:42	Clear, no turbidity, no odour, no sheen.	1.01	18.8	130.1	6.00	-122.4	83.4
MW107S	23/11/2023 10:46	Clear, no turbidity, no odour, no sheen.	1.84	18.3	101.7	5.15	-88.4	117.4
MW108D	22/11/2023 14:15	Brown, high turbidity, no odour, no sheen.	3.90	20.8	288.4	6.52	-123.3	82.5
MW108S	22/11/2023 14:00	Brown, high turbidity, organic odour, no sheen.	5.87	21.0	345.3	3.29	110.6	316.4
MW109D	22/11/2023 14:43	Yellow, no turbidity, sulfurous odour, no sheen.	1.12	20.0	760.0	5.72	-116.2	89.6
MW118	28/11/2023 10:24	Light brown, medium turbidity, organic odour, no sheen.	0.73	22.0	193.0	5.72	-50.9	154.9
MW121	20/11/2023 14:57	Light brown, no turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	0.79	19.6	94.6	6.30	-132.9	72.9
MW122	21/11/2023 10:52	Orange, high turbidity, organic odour, biosheen.	0.68	20.4	849.0	6.05	-150.2	55.6
MW123	21/11/2023 13:02	Brown, low turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	1.07	22.5	279.2	6.26	-48.8	157.0
MW124	21/11/2023 14:20	Yellow, no turbidity, sulfurous odour, no sheen.	2.29	21.1	161.0	5.75	-60.4	145.4
MW125D	21/11/2023 15:10	Grey, low turbidity, organic odour, no sheen.	0.85	21.3	1401.0	6.31	-58.2	147.6
MW125S	21/11/2023 14:55	Brown/orange, high turbidity, organic odour, no sheen.	1.21	22.0	553.0	6.06	3.6	209.4
MW126D	23/11/2023 10:09	Light brown, low turbidity, no odour, no sheen.	0.68	22.0	251.2	6.63	-68.9	136.9
MW126S	23/11/2023 9:56	Brown, medium turbidity, no odour, no sheen.	0.78	21.5	320.2	6.45	-73.1	132.7
MW128D	28/11/2023 10:47	Light brown, no turbidity, organic odour, no sheen.	1.07	19.3	1526.0	7.46	-189.9	15.9
MW128S	28/11/2023 10:55	Light yellow, no turbidity, organic odour, no sheen.	5.73	18.4	6255.0	7.87	-84.3	121.5
MW130D	27/11/2023 12:28	Clear, no turbidity, no odour, no sheen.	2.91	20.9	130.5	4.92	-62.1	143.7
MW130S	27/11/2023 12:25	Light brown, no turbidity, sulfurous odour, no sheen.	0.52	21.9	156.6	4.56	-72.6	133.2
MW132D	23/11/2023 14:03	Clear, no turbidity, no odour, no sheen.	0.98	21.4	211.4	5.60	-96.9	108.9
MW132S	23/11/2023 14:16	Light brown, no turbidity, no odour, no sheen.	0.75	24.4	158.2	5.13	-76.0	129.8
MW134D	22/11/2023 10:38	Clear, no turbidity, no odour, no sheen.	1.43	19.1	188.7	5.18	13.7	219.5
MW134I	22/11/2023 10:28	Clear, no turbidity, no odour, no sheen.	0.76	20.0	200.6	4.57	-20.5	185.3
MW139	27/11/2023 10:58	Light yellow, no turbidity, no odour, no sheen.	1.25	23.2	1169.0	5.33	-55.2	150.6
MW146AD	23/11/2023 11:10	Grey, high turbidity, organic odour, no sheen.	0.70	21.0	334.3	6.51	-72.0	133.8
MW146S	24/11/2023 9:34	Orange, medium turbidity, no odour, no sheen.	0.79	22.1	1022.0	6.47	-30.0	175.8
MW156D	23/11/2023 9:20	Light brown, low turbidity, organic odour, no sheen.	1.57	19.8	274.0	6.34	-94.9	110.9
MW160	23/11/2023 13:11	Light brown, low turbidity, sulfurous odour, no sheen. Sediment at base of Hydrasleeve.	0.89	19.9	179.3	4.79	-61.8	144.0
MW162D	21/11/2023 10:12	Clear, no turbidity, organic odour, no sheen.	0.98	22.0	143.5	6.04	-103.1	102.7
MW162S	21/11/2023 10:24	Dark brown, medium turbidity, no odour, no sheen.	4.02	22.3	96.1	5.80	112.8	318.6
MW163	28/11/2023 12:15	Clear, no turbidity, no odour, no sheen.	1.40	18.8	8081.0	6.83	-110.5	95.3
MW166	22/11/2023 10:15	Yellow/brown, medium turbidity, sulfurous odour, no sheen.	1.00	19.9	303.1	6.29	-52.5	153.3
MW167	22/11/2023 10:36	Brown, high turbidity, organic odour, no sheen.	2.70	20.9	145.7	5.91	-42.5	163.3
MW168	22/11/2023 10:28	Brown, high turbidity, organic odour, no sheen.	1.59	20.9	139.2	5.26	53.5	259.3
MW169D	22/11/2023 10:50	Clear, low turbidity, no odour, no sheen.	5.45	20.8	183.8	6.59	-79.4	126.4
MW169S	22/11/2023 11:04	Brown, medium turbidity, no odour, no sheen.	2.50	20.6	117.4	5.35	110.4	316.2
MW172	22/11/2023 11:28	Brown, medium turbidity, sulfurous odour, no sheen.	2.22	21.1	266.3	5.21	-1.5	204.3
MW175D	22/11/2023 14:28	Light yellow, low turbidity, organic odour, no sheen.	4.13	22.0	190.8	6.60	-73.5	132.3
MW178	21/11/2023 14:35	Brown, high turbidity, organic odour, no sheen.	2.18	19.4	614.0	5.85	-81.4	124.4
MW179D	22/11/2023 11:47	Clear, no turbidity, no odour, no sheen. Suspended solids.	0.85	20.3	125.7	5.69	32.6	238.4
MW179S	22/11/2023 11:54	Light brown, low turbidity, no odour, no sheen. Suspended solids.	0.92	20.6	165.9	4.87	-36.5	169.3
MW196	22/11/2023 9:10	Light brown, low turbidity, no odour, no sheen.	1.00	20.6	106.6	4.60	258.8	464.6
MW198	22/11/2023 9:26	Brown, low turbidity, no odour, no sheen.	0.72	21.0	99.2	5.58	-94.2	111.6
MW202D	22/11/2023 11:39	Dark grey, medium turbidity, no odour, no sheen.	0.58	21.4	168.9	6.74	-104.7	101.1
MW202S	22/11/2023 11:12	Brown, medium turbidity, no odour, no sheen.	0.99	21.9	126.3	5.79	-13.6	192.2
MW208	23/11/2023 13:35	Light yellow, low turbidity, no odour, no sheen.	3.10	23.7	187.6	6.01	139.5	345.3
MW209D	n/a	Unable to access due to well located beneath stockpiled material.	n/a	n/a	n/a	n/a	n/a	n/a
MW209S	n/a	Unable to access due to well located beneath stockpiled material.	n/a	n/a	n/a	n/a	n/a	n/a
MW212	23/11/2023 8:41	Light brown, low turbidity, no odour, no sheen.	1.37	21.4	226.9	6.82	-20.9	184.9
MW230S	27/11/2023 14:34	Light brown, no turbidity, no odour, no sheen.	1.06	21.0	383.9	6.03	-45.9	159.9
MW231D	28/11/2023 8:35	Light grey, no turbidity, sulfurous odour, no sheen.	1.54	20.9	17595.0	6.91	-253.4	-47.6

Table T2 - Groundwater Quality Parameters and Observations

Location Code	Sampled Date Time	Sample Comment	Water Quality Parameters					
			Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
MW231S	28/11/2023 8:25	Light brown, no turbidity, no odour, no sheen.	0.61	20.5	17092.0	6.91	-123.7	82.1
MW232D	24/11/2023 7:52	Clear, no turbidity, no odour, no sheen.	0.58	20.1	14927.0	7.45	-128.0	77.8
MW232S	24/11/2023 7:48	Light brown, no turbidity, no odour, no sheen.	0.62	19.1	1611.0	7.59	-133.9	71.9
MW236D	27/11/2023 13:45	Light yellow, low turbidity, sulfurous odour, no sheen.	2.00	21.1	120.0	6.02	-65.1	140.7
MW236S	27/11/2023 13:57	Light brown, medium turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	3.53	21.6	304.8	5.47	24.1	229.9
MW238D	27/11/2023 13:04	Light yellow, low turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	1.80	23.7	214.8	6.54	-27.0	178.8
MW238S	27/11/2023 13:10	Light brown, low turbidity, no odour, no sheen.	1.41	20.2	85.3	5.17	85.3	291.1
MW240D	22/11/2023 13:41	Clear, no turbidity, sulfurous odour, no sheen.	0.64	21.4	81.3	5.21	-60.6	145.2
MW241D	23/11/2023 8:42	Light brown, no turbidity, organic odour, no sheen.	0.73	19.5	13.3	6.15	-170.1	35.7
MW241S	23/11/2023 9:15	Light brown, medium turbidity, sulfurous odour, no sheen. No Hydrasleeve in well, only 1.2 m water column, sample taken using bailer, Hydrasleeve installed for next round.	1.52	20.8	87.2	5.28	-100.9	104.9
MW244D	22/11/2023 8:30	Light brown, low turbidity, no odour, no sheen.	0.86	20.7	296.7	6.33	-36.7	169.1
MW244S	22/11/2023 8:38	Light yellow, no turbidity, no odour, no sheen.	0.77	21.0	128.7	5.22	-104.7	101.1
MW247D	24/11/2023 11:22	Light brown, low turbidity, no odour, no sheen.	0.59	19.6	145.0	6.14	-12.2	193.6
MW247S	24/11/2023 11:10	Yellow, low turbidity, organic odour, no sheen.	0.59	21.1	342.6	5.23	-27.2	178.6
MW256D	21/11/2023 13:26	Light brown, low turbidity, sulfurous odour, no sheen.	0.47	20.3	212.1	6.79	-179.4	26.4
MW256S	21/11/2023 13:25	Light brown, low turbidity, no odour, no sheen.	0.49	21.7	110.7	5.19	-37.3	168.5
MW257D	21/11/2023 14:05	Light brown, no turbidity, septic odour, no sheen. Sediment at base of Hydrasleeve.	0.43	21.2	517.0	7.12	-176.3	29.5
MW257S	21/11/2023 13:50	Light brown, low turbidity, no odour, no sheen.	0.67	21.6	69.4	5.93	-49.7	156.1
MW258D	20/11/2023 13:32	Yellow, no turbidity, no odour, no sheen.	3.02	20.4	226.4	7.17	-112.5	93.3
MW258S	20/11/2023 13:39	Brown, low turbidity, organic odour, no sheen. Sediment at base of Hydrasleeve.	0.81	20.0	118.0	5.03	-62.4	143.4
MW260D	21/11/2023 14:45	Clear, no turbidity, no odour, no sheen.	1.28	20.7	2744.0	6.04	-60.7	145.1
MW260S	21/11/2023 14:34	Orange, high turbidity, no odour, no sheen. Suspended orange organics.	0.80	22.3	2400.0	6.66	-104.5	101.3
MW263D	20/11/2023 13:05	Light yellow, no turbidity, no odour, no sheen. Suspended solids.	0.67	20.0	484.8	7.34	-182.2	23.6
MW263S	20/11/2023 12:55	Light brown, low turbidity, no odour, no sheen. Sediment at base of Hydrasleeve.	0.72	21.1	531.0	5.43	-69.6	136.2
MW271D	27/11/2023 11:40	Light brown, low turbidity, no odour, no sheen. Suspended orange sediments.	1.53	24.6	267.0	6.38	-24.5	181.3
MW271S	27/11/2023 11:52	Light brown, low turbidity, no odour, no sheen. Suspended orange sediments.	1.19	19.8	458.2	5.46	2.7	208.5
MW278D	21/11/2023 15:36	Yellow, no turbidity, no odour, no sheen.	1.88	20.7	309.5	6.77	-156.4	49.4
MW278S	21/11/2023 15:42	Light brown, low turbidity, organic odour, no sheen.	1.20	20.0	298.4	6.22	-127.2	78.6
MW279S	21/11/2023 13:40	Light yellow, medium turbidity, organic odour, no sheen.	1.23	19.2	1761.0	7.37	-168.8	37.0
MW280S	23/11/2023 9:35	Brown, medium turbidity, sulfurous odour, no sheen. Sediment at base of Hydrasleeve.	1.30	19.9	159.7	4.54	-58.9	146.9
MW281S	22/11/2023 13:45	Brown, high turbidity, sulfurous odour, no sheen.	2.65	19.8	229.1	4.97	-60.0	145.8
MW282S	22/11/2023 13:35	Light brown, low turbidity, organic odour, no sheen.	4.00	20.3	135.6	4.85	-50.5	155.3
MW315D	23/11/2023 11:21	Clear, no turbidity, no odour, no sheen.	0.96	20.0	91.3	5.68	-103.9	101.9
MW315S	23/11/2023 11:15	Light brown, no turbidity, sulfurous odour, no sheen.	1.32	21.1	139.4	5.04	-76.4	129.4
MW316D	21/11/2023 12:21	Clear, low turbidity, no odour, no sheen.	0.69	21.4	24063.0	6.84	-113.1	92.7
MW318D	23/11/2023 13:30	Clear, no turbidity, no odour, no sheen.	1.22	21.0	250.0	6.27	-132.0	73.8
MW318S	23/11/2023 13:33	Clear, no turbidity, sulfurous odour, no sheen. Sediment at base of Hydrasleeve.	0.65	22.4	165.5	4.77	-69.1	136.7
MW433	23/11/2023 9:32	Dark brown, high turbidity, organic odour, no sheen. Sediment at base of Hydrasleeve.	0.63	20.3	189.3	5.87	-36.7	169.1
MW466	22/11/2023 14:20	Light brown, no turbidity, organic odour, no sheen.	1.09	21.5	122.0	5.38	-74.8	131.0
MW468	22/11/2023 14:30	Light brown, no turbidity, organic odour, no sheen.	0.70	21.6	120.4	5.79	-115.4	90.4
MW829	23/11/2023 12:59	Light brown, no turbidity, no odour, no sheen.	4.08	22.8	11.5	5.40	6.2	212.0
POT382	28/11/2023 8:15	Clear, no turbidity, no odour, no sheen.	1.11	23.2	2202.0	7.54	18.3	224.1

**Notes**

mg/L milligrams per Litre  
 °C degrees Celsius  
 µS/cm microSiemens per centimetre  
 mV milliVolts  
 Corrected field Redox measurement Eh = Er + 205.8  
 n/a not applicable

Table T3 - Surface Water Quality Parameters and Observations

Location Code	Alternative Name	Sampled Date/Time	Location Comments	Sample Depth From (m)	Sample Depth To (m)	Sample Comment	Water Quality Parameters					
							Dissolved Oxygen mg/L	Temperature °C	Electrical Conductivity µS/cm	pH pH_Units	Redox Potential Er mV	Redox Potential Eh (Corrected) mV
SW001	MD1	21/11/2023 10:02	Creek/stormwater drain. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.4 m. Water flow not observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	4.96	23.8	153.1	6.26	92.9	298.7
SW005	MD5	21/11/2023 12:25	Creek. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.2 m. Water flow not observed.	0.05	0.10	Brown, low turbidity, no odour, no sheen.	4.31	22.4	5814.0	6.79	-18.6	187.2
SW006	MD6	n/a	Creek/stormwater drain. Dry. Water flow not observed.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SW007	MD7	21/11/2023 10:21	Creek/stormwater drain. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.1 m. Water flow not observed.	0.05	0.10	Clear, no turbidity, no odour, no sheen.	7.34	26.3	136.9	6.06	41.2	247.0
SW009	MD8	28/11/2023 9:47	Creek. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.3 m. Water flow not observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	6.30	23.6	170.0	6.15	95.9	301.7
SW011	MD10	27/11/2023 14:14	Ephemeral stormwater drain. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.1 m. Water flow not observed.	0.10	0.10	Brown, no turbidity, no odour, no sheen.	5.39	29.3	204.7	5.85	24.7	230.5
SW014	MD14	21/11/2023 11:53	Creek. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.4 m. Water flow not observed.	0.10	0.20	Brown, no turbidity, no odour, no sheen.	4.10	21.2	361.0	5.55	-80.5	125.3
SW019	TC12	28/11/2023 10:15	Creek with drain. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.0 m. Water flow observed.	0.10	0.20	Yellow, low turbidity, no odour, biosheen.	2.46	23.7	2038.0	7.72	-25.3	180.5
SW023	TC6A	20/11/2023 11:35	Creek. Waterbody width (approx.): 4.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	0.10	0.20	Light brown, no turbidity, no odour, biosheen.	3.41	25.7	1534.0	7.61	73.2	279.0
SW024	TC7	20/11/2023 10:50	Creek. Waterbody width (approx.): 10.0 m. Waterbody depth (approx.): 0.3 m. Water flow observed.	0.10	0.20	Light brown, low turbidity, no odour, no sheen.	1.59	23.3	21871.0	6.95	71.7	277.5
SW047	BD03	22/11/2023 11:32	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.4 m. Water flow not observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	3.94	24.3	139.8	6.36	5.3	211.1
SW048	BD04	22/11/2023 11:38	Creek. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 0.2 m. Water flow not observed.	0.10	0.20	Clear, low turbidity, sulfurous odour, biosheen.	4.37	25.4	104.6	5.71	-9.3	196.5
SW055	DD1	22/11/2023 14:11	Stormwater drain. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.3 m. Water flow not observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	4.40	24.8	112.8	6.37	-39.6	166.2
SW059	DD2	23/11/2023 11:33	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	0.20	0.20	Brown, low turbidity, no odour, no sheen.	3.66	23.6	245.3	6.29	46.6	252.4
SW060	DD3	23/11/2023 10:31	Drain. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.5m. Water flow observed.	0.20	0.20	Yellow, low turbidity, no odour, biosheen.	3.11	25.4	369.5	7.23	-8.5	197.3
SW062	DD5	23/11/2023 13:12	Creek. Waterbody width (approx.): 2.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	0.20	0.20	Clear, low turbidity, no odour, no sheen.	7.71	27.4	2299.9	7.88	89.3	295.1
SW079	TC2	21/11/2023 13:25	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 1.0 m. Water flow not observed.	0.10	0.30	Clear, no turbidity, no odour, biosheen.	10.25	27.4	1356.0	8.41	61.7	267.5
SW081	TFD1	23/11/2023 12:58	Creek. Waterbody width (approx.): 3.0 m. Waterbody depth (approx.): 0.5 m. Water flow observed.	0.20	0.20	Light yellow, medium turbidity, organic odour, no sheen.	7.31	27.7	1960.6	7.75	103.9	309.7
SW108	LC	22/11/2023 14:40	Lake Cochran. Waterbody width (approx.): 50.0 m. Waterbody depth (approx.): 5.0 m. Water flow not observed.	0.20	0.30	Clear, no turbidity, no odour, no sheen.	7.24	27.4	119.9	6.69	54.0	259.8
SW110	LC_B	22/11/2023 14:58	Lake Cochran. Waterbody width (approx.): 50.0 m. Waterbody depth (approx.): 5.0 m. Water flow not observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	4.22	26.8	117.7	6.71	-64.7	141.1
SW259	FCD4	27/11/2023 15:10	Creek. Waterbody width (approx.): 6.0 m. Waterbody depth (approx.): 2.0 m. Water flow observed.	0.10	0.20	Clear, no turbidity, no odour, no sheen.	8.21	26.0	47018.0	7.80	25.2	231.0
SW600		27/11/2023 10:25	Creek. Waterbody width (approx.): 5.0 m. Waterbody depth (approx.): 1.0 m. Water flow not observed.	0.20	0.20	Clear, no turbidity, no odour, biosheen.	2.39	26.7	3279.8	7.38	86.1	291.9

Notes

mg/L milligrams per Litre  
 °C degrees Celsius  
 µS/cm microSiemens per centimetre  
 mV milliVolts  
 n/a not applicable  
 Corrected field Redox measurement Eh = Er + 205.8

Table T4 - Sediment Observations

Location Code	Alternative Name	Sampled Date Time	Sample Depth From (m)	Sample Depth To (m)	Sample Comment
SD001	MD1	21/11/2023 10:03	0.10	0.20	CLAY: dark brown, medium plasticity, saturated, with organic inclusions (rootlets, leaf litter). No odour, no staining.
SD005	MD5	21/11/2023 12:25	0.10	0.20	Sandy SILT: dark brown, low plasticity, sand is medium grain, poorly graded, saturated, with organics (leaf litter). No odour, no staining.
SD006	MD6	21/11/2023 10:43	0.10	0.20	CLAY: dark brown, medium plasticity, saturated, with significant organic inclusions (rootlets). No odour, no staining.
SD007	MD7	21/11/2023 10:21	0.10	0.20	SAND: brown, medium grain, poorly graded, saturated. No odour, no staining.
SD009	MD8	21/11/2023 11:28	0.10	0.20	SAND: dark grey, medium grain, saturated, organic inclusions (leaf litter). No odour, no staining.
SD011	MD10	28/11/2023 9:16	0.10	0.20	Silty SAND: dark brown, medium grained, poorly graded, saturated, silt is dark brown, low plasticity, with organic inclusions (rootlets, leaf litter). No odour, no staining.
SD014	MD14	21/11/2023 11:55	0.10	0.20	CLAY: dark brown, medium plasticity, saturated, with significant organic inclusions (rootlets and leaf litter). No odour, no staining.
SD019	TC12	28/11/2023 10:23	0.20	0.30	Sandy SILT: black, low plasticity, fine grained, saturated, organic inclusions. No odour, no staining.
SD023	TC6A	20/11/2023 11:35	0.10	0.20	CLAY: dark brown, medium plasticity, wet. No odour, no staining.
SD024	TC7	20/11/2023 10:50	0.10	0.20	CLAY: dark brown, medium to high plasticity, wet, trace fine subangular gravels and organics. No odour, no staining.
SD047	BD03	23/11/2023 14:40	0.30	0.30	SAND: orange, fine grained, moist, with rootlets and trace fine gravels. No odour, no staining.
SD048	BD04	22/11/2023 11:40	0.10	0.30	SAND: dark brown, fine grained, poorly graded, with trace rootlets. No odour, no staining.
SD055	DD1	22/11/2023 14:13	0.10	0.20	SAND: brown, medium grained, poorly graded, saturated, with organic inclusions (rootlets). No odour, no staining.
SD059	DD2	23/11/2023 11:36	0.10	0.30	SAND: dark grey, fine grained, trace organic material (leaves). No odour, no staining.
SD060	DD3	23/11/2023 10:28	0.20	0.30	Silty CLAY: dark brown, high plasticity, saturated, with organic inclusions (rootlets). No odour, no staining.
SD062	DD5	23/11/2023 13:19	0.20	0.30	Silty CLAY: black, high plasticity, saturated, trace fine subangular gravels, with organic inclusions (rootlets). No odour, no staining.
SD079	TC2	21/11/2023 13:30	0.10	0.30	Silty SAND: black, fine grained, saturated, trace subrounded gravels. No odour or staining.
SD081	TFD1	23/11/2023 13:03	0.20	0.30	Silty SAND: brown, low plasticity, dry, fine grained sand, with organic inclusions (rootlets). No odour, no staining.
SD108	LC	23/11/2023 14:35	0.20	0.30	SAND: dark brown, fine grained, wet, with organic inclusions (rootlets). No odour, no staining.
SD110	LC_B	23/11/2023 14:19	0.20	0.30	SAND: dark brown, fine to medium grained, wet, with organic inclusions (rootlets). No odour, no staining.
SD254	FC1A	27/11/2023 15:31	0.10	0.10	Sandy SILT: black, low plasticity, saturated, medium grained sand, with shells. Organic odour, no staining.
SD255	FC1B	27/11/2023 15:35	0.10	0.10	Sandy SILT: black, low plasticity, saturated, coarse grained sand. Organic odour, no staining.
SD259	FCD4	27/11/2023 15:15	0.10	0.10	SAND: dark brown, coarse grained, well graded, saturated. No odour, no staining.
SD326	FC1C	27/11/2023 15:29	0.10	0.10	Sandy SILT: black, low plasticity, saturated, medium grained sand, shell inclusions. Organic odour, no staining.
SD600		27/11/2023 10:15	0.1	0.2	Silty CLAY: black, low plasticity, saturated, organic inclusions (roots and grass). No odour, no staining.















Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)		
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR																																				
PFAS NEMP 2020 Drinking Water																																				
PFAS NEMP 2020 Freshwater 99%																																				
MW106D	19 May 2020	0908_MW106D_200519	Normal	NSW_0908_PFASOMP	0.02	0.49	0.31	0.8	0.93	<0.02	<0.02	0.08	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	17 Nov 2020	0908_MW106_D_201117	Normal	NSW_0908_PFASOMP	0.05	1.93	0.42	2.35	2.80	<0.02	<0.02	0.36	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	14 May 2021	0908_MW106D_210514	Normal	NSW_0908_PFASOMP	0.03	1.23	0.77	2	2.60	<0.02	<0.02	0.09	<0.02	<0.1	0.04	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	08 Nov 2021	0908_MW106D_211108	Normal	NSW_0908_PFASOMP	0.02	0.22	0.3	0.52	0.60	<0.02	<0.02	0.2	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	24 May 2022	0908_MW106D_220524	Normal	NSW_0908_PFASOMP	0.14	1.64	2.57	4.21	5.62	0.23	0.24	0.20	<0.02	<0.1	0.07	0.46	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	08 Nov 2022	0908_MW106D_221108	Normal	NSW_0908_PFASOMP	0.03	0.48	0.78	1.26	1.52	0.05	0.05	0.03	<0.02	<0.1	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	08 May 2023	0908_MW106D_230508	Normal	NSW_0908_PFASOMP_23	0.08	1.21	1.52	2.73	3.54	0.14	0.12	0.10	<0.02	<0.1	0.06	0.27	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106D	23 Nov 2023	0908_MW106D_231123	Normal	NSW_0908_PFASOMP_23	0.03	0.39	0.62	1.01	1.23	0.04	0.04	0.02	<0.02	<0.1	0.09	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	10 Nov 2014	MW106S_10112014	Normal	NSW_0908_PFAS	<0.01	0.08	0.27	0.35	-	<0.01	-	-	<0.01	-	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	19 Jan 2016	MW106S_19012016	Normal	NSW_0908_PFAS	0.02	0.06	0.27	0.33	-	<0.02	-	-	<0.02	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW106S	25 Aug 2016	MW106S_250816	Normal	NSW_0908_PFAS	<0.01	0.04	0.08	0.12	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	17 Oct 2016	MW106S_171016	Normal	NSW_0908_PFAS	<0.01	0.08	0.17	0.25	-	0.01	-	-	<0.01	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	19 Jan 2017	MW106S_190117	Normal	ACTNSW_Hist_202012-3	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	19 Jan 2017	MW106S_190117	Normal	NSW_0908_PFAS	<0.01	0.04	0.13	0.17	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	19 Jan 2017	QC115_190117	Field_D	ACTNSW_Hist_202012-3	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	20 Jan 2017	MW106S_GW_170120	Normal	NSW_0908_PFAS	<0.01	0.04	0.67	0.71	0.71	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	09 May 2017	MW106S_090517	Normal	ACTNSW_Hist_202012-3	0.02	0.07	0.3	0.37	-	0.01	0.02	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW106S	03 Apr 2018	MW106S_GW_03042018	Normal	NSW_0908_PFAS	<0.01	0.04	0.2	0.24	0.26	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	21 Nov 2018	0908_MW106S_181121	Normal	NSW_0908_PFAS	<0.01	0.04	0.14	0.18	0.18	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	28 May 2019	0908_MW106S_190528	Normal	NSW_0908_PFAS	<0.01	0.08	0.06	0.14	0.14	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	04 Nov 2019	0908_MW106S_191104	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.08	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	12 May 2020	0908_MW106S_200512	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.08	0.12	0.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	17 Nov 2020	0908_MW106_S_201117	Normal	NSW_0908_PFASOMP	<0.01	0.01	0.02	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	14 May 2021	0908_MW106S_210514	Normal	NSW_0908_PFASOMP	<0.01	0.03	0.16	0.19	0.21	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW106S	08 Nov 2021	0908_MW106S_211108	Normal	NSW_0908_PFASOMP	<0.0																															

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Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides														
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)						
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L					
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56			0.07																																
PFAS NEMP 2020 Freshwater 99%					19	0.00023																																		
Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)						
MW107S	01 Feb 2017	MW107S_GW_01022017	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	01 Feb 2017	QC21_GW_01022017	Field_D	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	01 May 2018	MW107S_GW_01052018	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	07 Aug 2018	0908_MW107S_180807	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	07 Sep 2018	0908_MW107S_180907	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	05 Oct 2018	0908_MW107S_181005	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	27 Nov 2018	0908_MW107S_181127	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	23 Jan 2019	0908_MW107S_190123	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	29 Mar 2019	0908_MW107S_190329	Normal	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	29 Mar 2019	0908_QC100_190329	Field_D	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	29 Mar 2019	0908_QC200_190329	Interlab_D	NSW_0908_PFASMGMT	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW107S	22 May 2019	0908_QC200_190522	Interlab_D	NSW_0908_PFAS	0.12	8.8	1.4	10.2	-	0.078	0.094	0.090	<0.01	0.089	0.13	0.47	0.049	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW107S	31 May 2019	0908_MW107S_190531	Normal	NSW_0908_PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	18 Jun 2019	0908_MW107S_190618	Normal	NSW_0908_PFASMGMT	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005			
MW107S	18 Jun 2019	0908_QC100_190618	Field_D	NSW_0908_PFASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	25 Sep 2019	0908_MW107S_190925	Normal	NSW_0908_PFASMGMT	<0.0005	<0.0005	<0.0005	<0.0005	0.0022	<0.0005	<0.0005	<0.0005	<0.0005	<0.002	0.0005	0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
MW107S	19 Nov 2019	0908_MW107S_191119	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05			
MW107S	02 Dec 2019	0908_MW107S_191202	Normal	NSW_0908_PFAS	<0.0005	0.001	<0.0005	0.001	0.0021	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
MW107S	12 Mar 2020	0908_MW107S_200312	Normal	NSW_0908_PFASMGMT	<0.0005	0.0029	<0.0005	0.0029	0.0046	0.0005	<0.0005	<0.0005	<0.0005	<0.002	<0.0005	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			
MW107S	19 May 2020	0908_MW107S_200519	Normal	NSW_0908_PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.				









Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0002	0.0002																												
PFAS NEMP 2020 Drinking Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																												
MW126S	26 Nov 2018	0908_MW126S_181126	Normal	NSW_0908_PFAAS	0.13	1.63	2.64	4.27	5.82	0.28	0.28	0.21	<0.02	<0.1	0.1	0.48	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
MW126S	21 May 2019	0908_MW126S_190521	Normal	NSW_0908_PFAAS	0.38	3.6	7.04	10.6	15.6	0.88	1.03	0.55	<0.02	<0.1	0.29	1.6	0.23	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	21 May 2019	0908_MW126S_190521	Normal	NSW_0908_PFAAS	-	-	-	10.64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW126S	21 May 2019	0908_QC100_190521	Field_D	NSW_0908_PFAAS	0.38	3.63	7.29	10.9	15.9	0.88	1.06	0.55	<0.02	<0.1	0.27	1.6	0.23	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	21 May 2019	0908_QC100_190521	Field_D	NSW_0908_PFAAS	-	-	-	10.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW126S	21 May 2019	0908_QC200_190521	Interlab_D	NSW_0908_PFAAS	0.32	3.1	8.2	11.3	-	0.77	0.72	0.34	<0.01	0.19	0.27	1.5	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW126S	01 Nov 2019	0908_MW126S_191101	Normal	NSW_0908_PFAASOMP	0.35	3.86	7.02	10.9	15.6	1.02	0.70	0.55	<0.02	0.2	0.25	1.44	0.19	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	13 May 2020	0908_MW126S_200513	Normal	NSW_0908_PFAASOMP	0.53	8.44	8.7	17.1	23.2	0.97	1.16	0.70	<0.02	<0.1	0.33	2.08	0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	13 May 2020	0908_QC102_200513	Field_D	NSW_0908_PFAASOMP	0.56	9.2	8.52	17.7	24.0	0.93	1.34	0.79	<0.02	<0.1	0.31	1.97	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	13 May 2020	0908_QC202_200513	Interlab_D	NSW_0908_PFAASOMP	0.32	5.3	6	11.3	-	0.75	0.76	0.35	<0.01	0.17	0.27	1.3	0.18	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW126S	24 Nov 2020	0908_MW126_S_201124	Normal	NSW_0908_PFAASOMP	0.54	9.88	6.73	16.6	22.8	0.89	1.12	0.87	<0.02	0.2	0.33	1.96	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	19 May 2021	0908_MW126S_210519	Normal	NSW_0908_PFAASOMP	0.40	10.2	7.3	17.5	22.5	0.66	0.86	0.81	<0.02	0.1	0.24	1.72	0.24	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	09 Nov 2021	0908_MW126S_211109	Normal	NSW_0908_PFAASOMP	0.25	6.08	6.26	12.3	15.8	0.52	0.45	0.43	<0.02	<0.1	0.18	1.50	0.16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	31 May 2022	0908_MW126S_220531	Normal	NSW_0908_PFAASOMP	0.28	6.02	5.03	11	14.4	0.37	0.47	0.61	<0.02	0.1	0.14	1.25	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	09 Nov 2022	0908_MW126S_221109	Normal	NSW_0908_PFAASOMP	0.45	7.02	10.3	17.3	23.6	0.70	0.85	0.79	<0.02	0.2	0.38	2.61	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	11 May 2023	0908_MW126S_230511	Normal	NSW_0908_PFAASOMP_23	0.68	7.94	13.1	21	28.0	0.93	0.55	0.51	<0.02	0.2	0.47	3.25	0.39	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	11 May 2023	0908_QC112_230511	Field_D	NSW_0908_PFAASOMP_23	0.54	7.4	13.3	20.7	28.1	0.98	0.93	1.07	<0.02	0.2	0.49	2.81	0.34	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	11 May 2023	0908_QC212_230511	Interlab_D	NSW_0908_PFAASOMP_23	0.52	7	16	23	30	0.84	0.94	1.3	<0.02	0.25	0.41	2.9	0.35	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW126S	23 Nov 2023	0908_MW126S_231123	Normal	NSW_0908_PFAASOMP_23	0.35	4.25	7.06	11.3	15.6	0.55	0.72	0.80	<0.02	0.1	0.23	1.31	0.19	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	27 Jan 2016	MW128D_27012016	Normal	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW128D	11 Jan 2017	MW128D_GW_11012017	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	10 Apr 2018	MW128D_GW_10042018	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	26 Nov 2018	0908_MW128D_181126	Normal	NSW_0908_PFAAS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW128D	27 May 2019	0908_MW128D_190527	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	01 Nov 2019	0908_MW128D_191101	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	18 May 2020	0908_MW128D_200518	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	25 Nov 2020	0908_MW128_D_201125	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
MW128D	20 May 2021	0908_MW128D_210520																																















Table T8 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOA)	N-Methyl perfluorooctane sulfonamide (MeFOA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EFOA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EFOAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EFOSE)	
LOR	0.0002	0.0002																													
PFAS NEMP 2020 Drinking Water	0.56			0.07																											
PFAS NEMP 2020 Freshwater 99%	19	0.00023																													

Location Code	Date	Field ID	Sample Type	Project ID	0.56	90.8	3.63	94.4	97.2	0.11	0.22	0.38	0.14	<0.1	0.16	1	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
MW168	17 Jan 2017	MW168_GW_17012017	Normal	NSW_0908_PFAAS	0.56	90.8	3.63	94.4	97.2	0.11	0.22	0.38	0.14	<0.1	0.16	1	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
MW168	17 Jan 2017	MW168_GW_17012017	Normal	NSW_0908_PFAAS	-	-	-	94.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW168	03 May 2017	MW168_030517	Normal	ACTNSW_Hist_202012-3	0.56	59	9.9	68.9	-	<0.01	0.53	0.36	<0.01	<0.05	0.15	1.9	0.35	0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW168	23 Apr 2018	MW168_GW_23042018	Normal	NSW_0908_PFAAS	0.3	78.3	4.91	83.2	85.6	0.1	0.18	0.36	0.16	<0.1	0.1	1.03	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	23 Apr 2018	MW168_GW_23042018	Normal	NSW_0908_PFAAS	-	-	-	83.21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW168	08 Aug 2018	0908_MW168_180808	Normal	NSW_0908_PFAASMGMT	0.30	29.5	3.15	32.6	34.1	0.07	0.13	0.19	0.25	<0.1	0.06	0.38	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	03 Sep 2018	0908_MW168_180903	Normal	NSW_0908_PFAASMGMT	1.24	58.2	15.5	73.7	78.0	0.15	0.34	0.49	0.14	<0.1	0.18	1.42	0.31	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW168	03 Sep 2018	0908_QC100_180903	Field_D	NSW_0908_PFAASMGMT	1.30	56.9	14	70.9	75.4	0.14	0.36	0.47	0.16	<0.1	0.19	1.49	0.33	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW168	03 Sep 2018	0908_QC200-180903	Interlab_D	NSW_0908_PFAASMGMT	1.0	48	10	58	-	0.14	0.26	0.18	<0.01	0.12	0.19	1.3	0.25	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.055	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01
MW168	02 Oct 2018	0908_MW168_181002	Normal	NSW_0908_PFAASMGMT	0.34	75.5	4.41	79.9	82.5	0.14	0.24	0.40	<0.02	<0.1	0.15	1.21	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	02 Oct 2018	0908_QC104_181002	Field_D	NSW_0908_PFAASMGMT	0.35	66.7	4.68	71.4	74.1	0.14	0.23	0.44	<0.02	<0.1	0.16	1.22	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	02 Oct 2018	0908_QC204_181002	Interlab_D	NSW_0908_PFAASMGMT	0.23	61	3	64	-	0.10	0.16	0.16	<0.01	<0.05	0.11	0.79	0.080	0.012	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.015	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	<0.02	<0.01
MW168	29 Nov 2018	0908_MW168_181129	Normal	NSW_0908_PFAAS	0.08	34.2	1.36	35.6	36.3	0.04	0.08	0.08	<0.02	<0.1	0.04	0.37	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	29 Nov 2018	0908_MW168_181129	Normal	NSW_0908_PFAAS	-	-	-	35.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW168	29 Nov 2018	0908_QC108_181129	Field_D	NSW_0908_PFAAS	0.25	11.6	3.75	15.4	17.6	0.3	0.34	0.22	<0.02	<0.1	0.19	0.83	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW168	29 Nov 2018	0908_QC108_181129	Field_D	NSW_0908_PFAAS	-	-	-	15.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW168	22 Jan 2019	0908_MW168_190122	Normal	NSW_0908_PFAASMGMT	0.10	41.5	3.07	44.6	45.9	0.10	0.16	0.12	<0.02	<0.1	0.06	0.71	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	01 Apr 2019	0908_MW168_190401	Normal	NSW_0908_PFAASMGMT	0.11	24.6	2.25	26.8	27.4	0.06	0.07	0.10	<0.02	<0.1	0.02	0.19	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	31 May 2019	0908_MW168_190531	Normal	NSW_0908_PFAAS	0.07	23.3	1.28	24.58	24.9	0.03	0.06	0.07	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW168	31 May 2019	0908_MW168_190531	Normal	NSW_0908_PFAAS	-	-	-	24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW168	20 Jun 2019	0908_MW168_190620	Normal	NSW_0908_PFAASMGMT	0.09	13.5	1.53	15	15.5	0.06	0.09	0.09	<0.02	<0.1	<0.02	0.12	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	24 Sep 2019	0908_MW168S_190924	Normal	NSW_0908_PFAASMGMT	0.16	25.9	2.17	28.1	30.3	0.16	0.16	0.14	<0.02	<0.1	0.28	1.28	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	06 Nov 2019	0908_MW168_191107	Normal	NSW_0908_PFAASOMP	0.09	19.6	1.16	20.8	22.6	0.10	0.18	0.10	<0.02	<0.1	0.16	1.15	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
MW168	29 Nov 2019	0908_MW168_191129	Normal	NSW_0908_PFAASMGMT																																						







Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides										
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)		
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56			0.07																												
PFAS NEMP 2020 Freshwater 99%					19	0.00023																														
MW171S	12 Jan 2022	0908_MW171S_220112	Normal	NSW_0908_PFAASMGMT	0.15	0.65	0.43	1.08	1.37	<0.02	<0.02	0.12	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
MW171S	12 Jan 2022	0908_QC100_220112	Field_D	NSW_0908_PFAASMGMT	0.16	0.65	0.45	1.1	1.42	<0.02	<0.02	0.13	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	12 Jan 2022	0908_QC200_220112	Interlab_D	NSW_0908_PFAASMGMT	0.13	0.48	0.44	0.92	1.2	<0.01	0.02	0.10	<0.02	<0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.02	<0.02	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	
MW171S	14 Mar 2022	0908_MW171S_220314	Normal	NSW_0908_PFAASMGMT	0.14	0.76	0.47	1.23	1.59	<0.02	0.04	0.15	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	14 Mar 2022	0908_QC100_220314	Field_D	NSW_0908_PFAASMGMT	0.12	0.69	0.45	1.14	1.45	<0.02	0.03	0.14	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	14 Mar 2022	0908_QC200_220314	Interlab_D	NSW_0908_PFAASMGMT	0.13	0.66	0.52	1.2	1.5	0.01	0.03	0.15	<0.02	<0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW171S	19 May 2022	0908_MW171S_220519	Normal	NSW_0908_PFAASOMP	0.09	0.87	0.58	1.45	1.82	0.02	0.03	0.19	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	21 Jun 2022	0908_MW171S_220621	Normal	NSW_0908_PFAASMGMT	0.08	1.49	0.65	2.14	2.55	<0.02	0.03	0.26	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	21 Jun 2022	0908_QC201_220621	Interlab_D	NSW_0908_PFAASMGMT	0.08	1.9	0.53	2.4	2.8	0.01	0.03	0.24	<0.02	<0.02	<0.02	0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5
MW171S	12 Sep 2022	0908_MW171S_220912	Normal	NSW_0908_PFAASMGMT	0.06	1.16	0.8	1.96	2.41	0.03	0.06	0.17	<0.02	<0.1	0.03	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	12 Sep 2022	0908_QC100_220912	Field_D	NSW_0908_PFAASMGMT	0.05	1.21	0.84	2.05	2.46	0.03	0.06	0.16	<0.02	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW171S	10 May 2023	0908_MW171S_230510	Normal	NSW_0908_PFAASOMP_23	0.07	0.63	0.79	1.42	1.83	0.04	0.06	0.15	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW172	14 Jan 2016	MW172_14012016	Normal	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW172	14 Jan 2016	QC102_WG_14012016	Field_D	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW172	02 Sep 2016	MW172_020916	Normal	NSW_0908_PFAAS	<0.01	0.1	0.03	0.13	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW172	12 Oct 2016	MW172_121016	Normal	NSW_0908_PFAAS	<0.01	0.05	0.02	0.07	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW172	16 Jan 2017	MW172_160117	Normal	ACTNSW_Hist_202012-3	<0.01	0.03	0.03	0.06	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW172	16 Jan 2017	MW172_160117	Normal	NSW_0908_PFAAS	<0.01	0.03	0.03	0.06	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW172	25 Jan 2017	MW172_GW_25012017	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW172	03 May 2017	MW172_030517	Normal	ACTNSW_Hist_202012-3	<0.01	0.31	0.12	0.43	-	0.06	0.04	<0.01	<0.01	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW172	09 Aug 2018	0908_MW172_180809	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW172	05 Sep 2018	0908_MW172_180905	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW172	03 Oct 2018	0908_MW172_181003	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW172	29 Nov 2018	0908_MW172_181129	Normal	NSW_0908_PFAAS	<0.01	<0.01	0.03	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05			
MW172	29 Nov 2018	0908_MW172_181129	Normal	NSW_0908_PFAAS	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW172	23 Jan 2019	0908_MW172_190123	Normal	NSW_0908_PFAASMGMT	<0.01	<0.01	0.06	0.06	0.16	0.05	0.05	<0.02	<0.02	<0.1	<0.02	<0.02	<0																			

Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water					0.56		0.07																														
PFAS NEMP 2020 Freshwater 99%					19	0.00023																															
Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
MW175D	24 Jan 2017	MW175D_GW_24012017	Normal	NSW_0908_PFAAS	0.09	3.49	0.76	4.25	4.81	0.06	0.08	0.09	<0.02	<0.1	0.04	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW175D	24 Jan 2017	QC717_24012017	Field_D	NSW_0908_PFAAS	0.08	3.8	0.71	4.51	5.05	0.06	0.08	0.08	<0.02	<0.1	0.04	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05		
MW175D	02 May 2017	MW175D_020517	Normal	ACTNSW_Hist_202012-3	0.03	1.4	0.33	1.73	-	0.02	0.03	0.04	<0.01	<0.05	0.01	0.08	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW175D	20 Apr 2018	MW175D_GW_20042018	Normal	NSW_0908_PFAAS	0.05	2.5	0.43	2.93	3.23	0.03	0.04	0.05	<0.02	<0.1	<0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	14 Sep 2018	0908_MW175D_180914	Normal	NSW_0908_PFAASMGMT	0.20	8.67	1.77	10.4	12.0	0.13	0.16	0.22	<0.02	<0.1	0.09	0.67	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	29 Nov 2018	0908_MW175D_181129	Normal	NSW_0908_PFAAS	0.08	4.43	0.77	5.2	5.75	0.06	0.07	0.06	<0.02	<0.1	0.04	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	31 May 2019	0908_MW175D_190531	Normal	NSW_0908_PFAAS	0.08	8.3	0.6	8.9	9.43	0.05	0.06	0.08	<0.02	<0.1	0.04	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	08 Nov 2019	0908_MW175D_191108	Normal	NSW_0908_PFAASOMP	0.06	2	0.65	2.65	3.25	0.08	0.09	0.05	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	11 May 2020	0908_MW175D_200511	Normal	NSW_0908_PFAASOMP	0.10	4.07	0.83	4.9	5.74	0.06	0.10	0.09	<0.02	<0.1	0.06	0.30	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.10	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW175D	17 Nov 2020	0908_MW175_D_201117	Normal	NSW_0908_PFAASOMP	0.06	3.99	0.64	4.63	5.16	0.05	0.06	0.06	<0.02	<0.1	0.05	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	17 May 2021	0908_MW175D_210517	Normal	NSW_0908_PFAASOMP	0.04	1.24	0.46	1.7	2.11	0.05	0.07	0.03	<0.02	<0.1	0.02	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	16 Nov 2021	0908_MW175D_211116	Normal	NSW_0908_PFAASOMP	0.03	2.1	0.4	2.5	2.89	0.05	0.05	0.03	<0.02	<0.1	0.03	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	16 Nov 2021	0908_QC108_211116	Field_D	NSW_0908_PFAASOMP	0.04	2.4	0.44	2.84	3.27	0.05	0.05	0.03	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	19 May 2022	0908_MW175D_220519	Normal	NSW_0908_PFAASOMP	0.05	3.45	0.76	4.21	4.81	0.06	0.08	0.04	<0.02	<0.1	0.08	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	10 Nov 2022	0908_MW175D_221110	Normal	NSW_0908_PFAASOMP	0.07	4.43	1.13	5.56	6.31	0.07	0.13	0.07	<0.02	<0.1	0.08	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	10 May 2023	0908_MW175D_230510	Normal	NSW_0908_PFAASOMP_23	0.07	4.61	1.05	5.66	6.32	0.07	0.10	0.04	<0.02	<0.1	0.07	0.27	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	10 May 2023	0908_QC119_230510	Field_D	NSW_0908_PFAASOMP_23	0.08	4.13	1.13	5.26	6.18	0.12	0.12	0.08	<0.02	<0.1	0.12	0.35	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW175D	22 Nov 2023	0908_MW175D_231122	Normal	NSW_0908_PFAASOMP_23	0.10	3.36	1.03	4.39	5.30	0.06	0.08	0.06	<0.02	<0.1	0.12	0.36	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW178	26 Feb 2016	MW178_26022016	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.01	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW178	26 Feb 2016	QC142_WG_26022016	Field_D	NSW_0908_PFAAS	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-		
MW178	10 Jan 2017	MW178_GW_10012017	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW178	27 Mar 2018	MW178_GW_27032018	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW178	26 Nov 2018	0908_MW178_181126	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<																							

Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005		
PFAS NEMP 2020 Drinking Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																												
MW179S	19 Jan 2017	MW179S_GW_19012017	Normal	NSW 0908 PFAS	0.01	0.08	0.26	0.34	0.42	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW179S	04 May 2017	MW179S_040517	Normal	ACTNSW_Hist_202012-3	0.06	0.17	1.2	1.37	-	0.08	0.1	0.03	<0.01	<0.05	0.05	0.25	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW179S	19 Apr 2018	MW179S_GW_19042018	Normal	NSW 0908 PFAS	0.06	0.46	1.67	2.13	3.13	0.17	0.24	0.03	<0.02	<0.1	0.09	0.38	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	22 Nov 2018	0908_MW179S_181122	Normal	NSW 0908 PFAS	0.05	0.46	0.83	1.29	1.67	0.08	0.09	0.06	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	30 May 2019	0908_MW179S_190530	Normal	NSW 0908 PFAS	0.02	0.59	0.74	1.33	1.65	0.08	0.12	0.03	<0.02	<0.1	0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	08 Nov 2019	0908_MW179S_191108	Normal	NSW 0908 PFASOMP	0.04	0.55	1.51	2.06	2.80	0.19	0.24	0.04	<0.02	<0.1	0.04	0.16	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	13 May 2020	0908_MW179S_200513	Normal	NSW 0908 PFASOMP	0.05	0.14	1.98	2.12	3.03	0.14	0.30	0.02	<0.02	<0.1	0.04	0.30	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	17 Nov 2020	0908_MW179S_201117	Normal	NSW 0908 PFASOMP	0.04	0.52	1.68	2.2	2.49	0.06	0.09	0.04	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	17 May 2021	0908_MW179S_210517	Normal	NSW 0908 PFASOMP	0.34	0.26	4.84	5.1	7.44	0.16	0.38	0.05	<0.02	0.1	0.19	0.85	0.27	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	16 Nov 2021	0908_MW179S_211116	Normal	NSW 0908 PFASOMP	0.29	0.14	1.19	1.33	2.39	0.04	0.08	0.02	<0.02	0.1	0.10	0.35	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	19 May 2022	0908_MW179S_220519	Normal	NSW 0908 PFASOMP	0.44	0.22	1.67	1.89	3.04	0.05	0.09	0.02	<0.02	0.1	0.11	0.27	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	10 Nov 2022	0908_MW179S_221110	Normal	NSW 0908 PFASOMP	0.12	0.19	0.61	0.8	1.19	<0.02	0.02	<0.02	<0.02	<0.1	0.08	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	10 May 2023	0908_MW179S_230510	Normal	NSW 0908 PFASOMP 23	0.37	0.24	1.52	1.76	2.93	0.04	0.09	0.03	<0.02	0.1	0.14	0.33	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW179S	22 Nov 2023	0908_MW179S_231122	Normal	NSW 0908 PFASOMP 23	0.07	0.17	0.37	0.54	0.95	<0.02	<0.02	<0.02	<0.02	<0.1	0.09	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW184D	02 Mar 2017	MW184D_170302	Normal	NSW 0908 PFAS	1.16	41	9.78	50.78	58.8	1.57	1.11	1.61	<0.02	0.2	0.44	1.72	0.26	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184D	02 Mar 2017	MW184D_170302	Normal	NSW 0908 PFAS	-	-	-	50.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW184D	21 Jun 2019	0908_MW184D_190621	Normal	NSW 0908 PFAS	0.52	30.2	3.97	34.17	37.8	0.38	0.48	0.69	<0.02	0.2	0.18	1.09	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW184D	21 Jun 2019	0908_MW184D_190621	Normal	NSW 0908 PFAS	-	-	-	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW184D	27 May 2020	0908_MW184D_200527	Normal	NSW 0908 PFASOMP	0.52	21.8	5.36	27.2	31.1	0.45	0.57	0.72	<0.02	0.1	0.16	1.24	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184D	13 May 2021	0908_MW184D_210513	Normal	NSW 0908 PFASOMP	0.14	5.36	1.7	7.06	8.26	0.14	0.17	0.18	<0.02	<0.1	0.07	0.43	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184D	13 May 2021	0908_QC200_210513	Interlab_D	NSW 0908 PFASOMP	0.13	4.2	1.3	5.5	-	0.11	0.12	0.11	<0.01	0.059	0.058	0.3	0.052	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
MW184D	17 May 2022	0908_MW184D_220517	Normal	NSW 0908 PFASOMP	0.16	5.22	1.46	6.68	7.77	0.11	0.16	0.14	<0.02	<0.1	0.06	0.38	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184D	17 May 2023	0908_MW184D_230517	Normal	NSW 0908 PFASOMP 23	0.15	4.43	1.6	6.03	7.03	0.10	0.14	0.16	<0.02	<0.1	0.06	0.34	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184S	02 Mar 2017	MW184S_170302	Normal	NSW 0908 PFAS	0.8	23.4	10.4	33.8	40.9	1.16	0.96	1.07	<0.02	0.3	0.65	1.84	0.36	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184S	21 Jun 2019	0908_MW184S_190621	Normal	NSW 0908 PFAS	0.29	20.1	2.62	22.7	24.8	0.17	0.23	0.33	<0.02	0.1	0.15	0.72	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184S	21 Jun 2019	0908_MW184S_190621	Normal	NSW 0908 PFAS	-	-	-	22.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW184S	27 May 2020	0908_MW184S_200527	Normal	NSW 0908 PFASOMP	0.04	5.52	0.52	6.04	6.29	0.04	0.05	0.06	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW184S	13 May 2021	0908_MW184S_210513	Normal	NSW 0908 PFASOMP	0.05	2.68	1.27	3.95	4.39	0.08	0.10																							



Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005		
PFAS NEMP 2020 Drinking Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																												
MW202D	08 Nov 2019	0908_MW202D_191108	Normal	NSW_0908_PFASOMP	0.02	0.05	0.8	0.85	1.28	0.09	0.10	<0.02	<0.02	<0.1	0.04	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	29 May 2020	0908_MW202D_200529	Normal	NSW_0908_PFASOMP	<0.01	0.07	0.11	0.18	0.22	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	17 Nov 2020	0908_MW202_D_201117	Normal	NSW_0908_PFASOMP	0.01	0.18	0.48	0.66	0.94	0.05	0.06	0.02	<0.02	<0.1	0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	17 May 2021	0908_MW202D_210517	Normal	NSW_0908_PFASOMP	<0.01	0.04	<0.02	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	10 Nov 2021	0908_MW202D_211110	Normal	NSW_0908_PFASOMP	<0.01	0.04	0.03	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	19 May 2022	0908_MW202D_220519	Normal	NSW_0908_PFASOMP	<0.01	0.12	0.1	0.22	0.24	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	19 May 2022	0908_QC212_220519	Interlab_D	NSW_0908_PFASOMP	<0.01	0.11	0.05	0.16	0.16	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	10 Nov 2022	0908_MW202D_221110	Normal	NSW_0908_PFASOMP	<0.01	0.14	0.09	0.23	0.23	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05		
MW202D	10 May 2023	0908_MW202D_230510	Normal	NSW_0908_PFASOMP_23	0.02	0.52	0.41	0.93	1.14	0.03	0.04	0.05	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202D	22 Nov 2023	0908_MW202D_231122	Normal	NSW_0908_PFASOMP_23	<0.01	0.13	0.07	0.2	0.20	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05		
MW202S	20 Jan 2016	MW202S_20012016	Normal	NSW_0908_PFAS	<0.01	0.28	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW202S	31 Aug 2016	MW202S_310816	Normal	NSW_0908_PFAS	0.02	1	0.43	1.43	-	0.01	-	-	<0.01	<0.05	0.02	0.12	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	15 Sep 2016	MW202S_150916	Normal	NSW_0908_PFAS	0.03	0.82	0.37	1.19	-	0.019	0.033	0.032	<0.01	<0.5	0.025	0.073	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	18 Oct 2016	MW202S_181016	Normal	NSW_0908_PFAS	0.03	1.9	0.55	2.45	-	0.02	-	-	<0.01	<0.05	0.02	0.11	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	18 Jan 2017	MW202S_180117	Normal	ACTNSW_Hist_202012-3	0.03	1.3	0.37	1.67	-	0.01	-	-	<0.01	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	18 Jan 2017	MW202S_GW_18012017	Normal	NSW_0908_PFAS	0.02	0.45	0.23	0.68	0.76	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW202S	18 Jan 2017	QC113_180117	Field_D	ACTNSW_Hist_202012-3	0.03	0.76	0.2	0.96	-	<0.01	-	-	<0.01	<0.05	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	15 Feb 2017	MW202S_150217	Normal	ACTNSW_Hist_202012-3	0.02	0.53	0.13	0.66	-	<0.01	-	-	<0.01	<0.05	0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	15 Feb 2017	MW202S_150217	Normal	NSW_0908_PFAS	0.02	0.53	0.13	0.66	-	<0.01	-	-	<0.01	<0.05	0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	15 Feb 2017	QC118_150217	Field_D	ACTNSW_Hist_202012-3	0.02	0.6	0.09	0.69	-	<0.01	-	-	<0.01	<0.05	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	05 May 2017	MW202S_050517	Normal	ACTNSW_Hist_202012-3	0.02	0.69	0.35	1.04	-	0.02	0.03	0.02	<0.01	<0.05	0.02	0.06	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
MW202S	04 Apr 2018	MW202S_GW_04042018	Normal	NSW_0908_PFAS	<0.01	0.15	0.05	0.2	0.3	<0.02	<0.02	<0.02	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW202S	22 Nov 2018	0908_MW202S_181122	Normal	NSW_0908_PFAS	<0.01	0.8	0.16	0.96	0.96	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	
MW202S	30 May 2019	0908_MW202S_190530	Normal	NSW_0908_PFAS	0.01	1.38	0.08	1.46	1.47	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	
MW202S	08 Nov 2019	0908_MW202S_191108	Normal	NSW_0908_PFASOMP	0.01	0.81	0.14	0.95	0.96	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	
MW202S	24 May 2021	0908_MW202S_210524	Normal	NSW_0908_PFASOMP	<0.01	0.61	0.3	0.91	0.94	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	
MW202S	10 Nov 2021																																	

Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water																																		
PFAS NEMP 2020 Freshwater 99%																																		
MW209D	04 Nov 2019	0908_QC200_191104	Interlab_D	NSW_0908_PFAASOMP	<0.01	0.78	0.092	0.872	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.01	<0.05			
MW209D	12 May 2020	0908_MW209D_200512	Normal	NSW_0908_PFAASOMP	<0.01	3.62	0.17	3.79	3.82	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209D	17 Nov 2020	0908_MW209_D_201117	Normal	NSW_0908_PFAASOMP	<0.01	0.22	0.06	0.28	0.28	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209D	14 May 2021	0908_MW209D_210514	Normal	NSW_0908_PFAASOMP	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209D	08 Nov 2021	0908_MW209D_211108	Normal	NSW_0908_PFAASOMP	<0.01	0.12	0.01	0.13	0.29	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209D	24 May 2022	0908_MW209D_220524	Normal	NSW_0908_PFAASOMP	<0.01	0.02	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	12 Jan 2016	MW209S_12012016	Normal	NSW_0908_PFAASOMP	0.01	1.89	-	1.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-			
MW209S	25 Aug 2016	MW209S_250816	Normal	NSW_0908_PFAASOMP	<0.01	1.2	0.06	1.26	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	19 Oct 2016	MW209S_191016	Normal	NSW_0908_PFAASOMP	<0.01	1.3	0.06	1.36	-	<0.01	-	-	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	13 Jan 2017	MW209S_130117	Normal	ACTNSW_Hist_202012-3	<0.01	1.2	0.07	1.27	-	<0.01	-	-	<0.01	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	17 Jan 2017	MW209S_GW_170117	Normal	NSW_0908_PFAASOMP	0.02	1.48	0.21	1.69	1.71	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	03 May 2017	MW209S_030517	Normal	ACTNSW_Hist_202012-3	0.02	1.1	0.21	1.31	-	<0.01	<0.01	0.03	<0.01	<0.05	<0.05	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	03 Apr 2018	MW209S_GW_03042018	Normal	NSW_0908_PFAASOMP	0.01	2.67	0.23	2.9	3	<0.02	0.02	0.02	<0.02	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	28 Jun 2018	0908_MW209S_180628	Normal	NSW_0908_Stage2	<0.01	2.67	0.15	2.82	2.85	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	21 Nov 2018	0908_MW209S_181121	Normal	NSW_0908_PFAASOMP	0.01	1.14	0.25	1.39	1.45	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	28 May 2019	0908_MW209S_190528	Normal	NSW_0908_PFAASOMP	0.02	2.38	0.32	2.7	2.77	<0.02	<0.02	0.03	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	28 May 2019	0908_QC103_190528	Field_D	NSW_0908_PFAASOMP	0.02	2.76	0.31	3.07	3.15	<0.02	<0.02	0.04	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	28 May 2019	0908_QC203_190528	Interlab_D	NSW_0908_PFAASOMP	0.018	1.4	0.34	1.74	-	<0.01	0.01	0.03	<0.01	<0.05	<0.02	0.026	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW209S	06 Nov 2019	0908_MW209S_191106	Normal	NSW_0908_PFAASOMP	0.01	2.95	0.21	3.16	3.28	<0.02	<0.02	0.02	<0.02	<0.1	0.03	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	12 May 2020	0908_MW209S_200512	Normal	NSW_0908_PFAASOMP	<0.01	2.43	0.04	2.47	2.47	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	17 Nov 2020	0908_MW209_S_201117	Normal	NSW_0908_PFAASOMP	<0.01	1.9	0.18	2.08	2.12	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	14 May 2021	0908_MW209S_210514	Normal	NSW_0908_PFAASOMP	0.06	2.76	2.01	4.77	5.31	0.05	0.10	0.08	<0.02	<0.1	0.02	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	14 May 2021	0908_QC103_210514	Field_D	NSW_0908_PFAASOMP	0.06	2.72	1.99	4.71	5.27	0.05	0.10	0.08	<0.02	<0.1	0.02	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	14 May 2021	0908_QC203_210514	Interlab_D	NSW_0908_PFAASOMP	0.045	2.2	1.6	3.8	-	0.044	0.087	0.054	<0.01	<0.05	0.027	0.17	0.021	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
MW209S	08 Nov 2021	0908_MW209S_211108	Normal	NSW_0908_PFAASOMP	0.01	2.2	0.14	2.34	2.35	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW209S	24 May 2022	0908_MW209S_220524	Normal	NSW_0908_PFAASOMP	<0.01	0.58	0.05	0.63	0.65	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW210D	18 Jan 2016	MW210D_18012016	Normal	NSW_0908_PFAASOMP	0.02	<0.01	0.5	0.5	-	0.67	-	-	<0.02	-	-	0.66	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02			
MW210D	26 Aug 2016	MW210D_260816	Normal	NSW_0908_PFAASOMP	<0.01	0.02	0.38	0.4	-	0.29	-	-	<0.01	<0.05	0.06	0.42	0.01	<0.01																



















Table T8 - Historical Groundwater Analytical Results

Location	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001
PFAS NEMP 2020 Drinking Water					0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%					19	0.00023																												
<b>Location Code</b>	<b>Date</b>	<b>Field ID</b>	<b>Sample Type</b>	<b>Project ID</b>	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05
MW271S	13 Apr 2018	MW271S_GW_13042018	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	28 Nov 2018	0908_MW271S_181128	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	13 Jun 2019	0908_MW271S_190613	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	08 Nov 2019	0908_MW271S_191108	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	26 May 2020	0908_MW271S_200526	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.08	0.08	0.23	0.04	0.02	<0.02	<0.02	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	13 Nov 2020	0908_MW271S_201113	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.03	0.03	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	12 Nov 2021	0908_MW271S_211112	Normal	NSW_0908_PFAASOMP	<0.01	0.01	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	16 May 2022	0908_MW271S_220516	Normal	NSW_0908_PFAASOMP	<0.01	0.01	0.02	0.03	0.06	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	14 Nov 2022	0908_MW271S_221114	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.02	0.02	0.17	0.12	0.03	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	15 May 2023	0908_MW271S_230515	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.02	0.02	0.05	0.13	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW271S	27 Nov 2023	0908_MW271S_231127	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.01	0.01	0.04	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	03 Mar 2017	MW278D_170303	Normal	NSW_0908_PFAAS	<0.01	0.05	<0.02	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	23 May 2019	0908_MW278D_190523	Normal	NSW_0908_PFAAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	07 Nov 2019	0908_MW278D_191107	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	28 May 2020	0908_MW278D_200528	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	27 Nov 2020	0908_MW278D_201127	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	13 May 2021	0908_MW278D_210513	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	13 May 2021	0908_QC202_210513	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW278D	09 Nov 2021	0908_MW278D_211109	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	09 Nov 2022	0908_MW278D_221109	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	09 Nov 2022	0908_QC112_221109	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW278D	09 Nov 2022	0908_QC212_221109	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW278D	11 May 2023	0908_MW278D_230511	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05		





Table T8 - Historical Groundwater Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR																																		
PFAS NEMP 2020 Drinking Water																																		
PFAS NEMP 2020 Freshwater 99%																																		
MW280S	16 Mar 2022	0908 MW280S 220316	Normal	NSW 0908 PFASMGMT	<0.002	<0.002	0.004	0.004	0.004	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	
MW280S	20 May 2022	0908 MW280S 220520	Normal	NSW 0908 PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW280S	30 Jun 2022	0908 MW280S 220630	Normal	NSW 0908 PFASMGMT	0.002	0.002	0.009	0.011	0.044	<0.002	<0.002	<0.002	<0.002	0.02	0.007	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	
MW280S	16 Sep 2022	0908 MW280S 220916	Normal	NSW 0908 PFASMGMT	<0.002	<0.002	0.006	0.006	0.030	<0.002	<0.002	<0.002	<0.002	0.02	<0.002	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005	
MW280S	11 Nov 2022	0908 MW280S 221111	Normal	NSW 0908 PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	18 May 2023	0908 MW280S 230518	Normal	NSW 0908 PFASOMP 23	<0.01	<0.01	0.01	0.01	0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW280S	23 Nov 2023	0908 MW280S 231123	Normal	NSW 0908 PFASOMP 23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	20 Mar 2017	MW281S_GW_200317	Normal	NSW 0908 PFAS	4.47	180	64	244	285	4.62	4.95	7.78	<0.02	1	2.27	14	1.52	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW281S	19 Apr 2018	MW281S_GW_19042018	Normal	NSW 0908 PFAS	8.75	206	76.9	283	318	1.9	3.16	7.35	<0.1	<0.5	1.27	10.3	1.99	<0.1	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.1	<0.1	<0.1	<0.25	<0.1	<0.25	<0.1	<0.25		
MW281S	19 Apr 2018	MW281S_GW_19042018	Normal	NSW 0908 PFAS	-	-	-	282.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW281S	22 Nov 2018	0908 MW281S 181122	Normal	NSW 0908 PFAS	8.01	191	41	232	264	1.57	2.23	9.9	<0.2	0.5	0.92	7.45	1.25	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	22 Nov 2018	0908 QC104 181122	Field_D	NSW 0908 PFAS	7.32	186	37.5	224	252	1.45	2.03	8.41	<0.02	0.4	0.83	7.14	1.13	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	22 Nov 2018	0908 QC104 181122	Field_D	NSW 0908 PFAS	-	-	-	223.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW281S	31 May 2019	0908 MW281S 190531	Normal	NSW 0908 PFAS	4.94	144	25.4	169	191	1.1	1.46	7.46	<0.02	0.3	0.73	4.43	0.77	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW281S	31 May 2019	0908 MW281S 190531	Normal	NSW 0908 PFAS	-	-	-	169.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW281S	23 Oct 2019	0908 MW281S 191023	Normal	NSW 0908 PFASMGMT	4.44	112	18.8	131	150	1.00	1.69	7.50	<0.02	0.3	0.62	3.63	0.60	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	06 Nov 2019	0908 MW281S 191107	Normal	NSW 0908 PFASOMP	4.64	112	19.4	131	152	1.12	1.80	7.66	<0.02	0.3	0.65	3.98	0.58	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	15 May 2020	0908 MW281S 200515	Normal	NSW 0908 PFASOMP	3.84	119	19.8	139	158	1.12	1.99	6.64	<0.02	0.2	0.62	4.13	0.55	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	16 Nov 2020	0908 MW281 S 201116	Normal	NSW 0908 PFASOMP	3.56	26.7	24.3	51	69.9	1.09	2.79	6.10	<0.02	0.3	0.55	3.83	0.64	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	25 May 2021	0908 MW281S 210525	Normal	NSW 0908 PFASOMP	2.19	63.3	26.2	89.5	109	2.23	2.84	4.69	<0.02	0.2	0.78	5.45	0.76	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	10 Nov 2021	0908 MW281S 211110	Normal	NSW 0908 PFASOMP	3.10	234	21.4	255	277	1.63	1.90	8.86	<0.02	0.2	0.53	4.89	0.63	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	26 May 2022	0908 MW281S 220526	Normal	NSW 0908 PFASOMP	2.16	68.6	19.4	88	103	1.87	2.32	3.12	<0.02	0.4	0.67	4.06	0.61	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	10 Nov 2022	0908 MW281S 221110	Normal	NSW 0908 PFASOMP	2.97	41.4	11.5	52.9	60.5	0.29	0.44	2.55	<0.02	<0.1	0.14	0.94	0.29	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	10 Nov 2022	0908 QC103 221110	Field_D	NSW 0908 PFASOMP	3.79	50	12.9	62.9	73.7	0.34	0.47	4.61	<0.02	0.1	0.18	1.06	0.26	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	10 Nov 2022	0908 QC203 221110	Interlab_D	NSW 0908 PFASOMP	2.8	31	9.6	41	48	0.31	0.34	2.4	<0.02	0.06	0.2	0.90	0.28	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW281S	10 May 2023	0908 MW281S 230510	Normal	NSW 0908 PFASOMP 23	1.67	108	21.8	130	143	1.15	1.78	3.70	<0.02	0.3	0.58	3.41	0.72	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05	
MW281S	10 May 2023	0908 QC217 230510	Interlab_D	NSW 0908 PFASOMP 23	1.6	73	20	93	110	1.1	2.2	2.9	<0.02	0.33	0.61	3.5	0.68	0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
MW281S	22 Nov 2023	0908 MW281																																



Table T8 - Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides													
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)					
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L						
LOR				0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.001	0.0005	0.001					
PFAS NEMP 2020 Drinking Water				0.56			0.07																														
PFAS NEMP 2020 Freshwater 99%				19	0.00023																																
Location Code	Date	Field ID	Sample Type	Project ID																																	
MW315D	18 May 2023	0908_MW315D_230518	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.16	0.16	0.30	0.04	0.03	<0.02	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315D	18 May 2023	0908_QC120_230518	Field_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.2	0.2	0.37	0.05	0.04	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315D	18 May 2023	0908_QC220_230518	Interlab_D	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.19	0.19	0.32	<0.01	0.05	<0.01	<0.02	<0.02	<0.02	0.08	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315D	23 Nov 2023	0908_MW315D_231123	Normal	NSW_0908_PFAASOMP_23	<0.01	<0.01	0.16	0.16	0.38	0.10	0.04	<0.02	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315S	26 Sep 2019	0908_MW315S_190926	Normal	NSW_0908_PFAASMGMT	<0.0005	<0.0003	0.0251	0.0251	0.0318	0.0019	0.0018	<0.0005	<0.0005	<0.002	<0.0005	0.0030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
MW315S	19 Nov 2019	0908_MW315S_191119	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315S	19 Nov 2019	0908_QC108_191119	Field_D	NSW_0908_PFAASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315S	19 Nov 2019	0908_QC208_191119	Interlab_D	NSW_0908_PFAASOMP	<0.01	<0.02	0.017	0.017		<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW315S	03 Dec 2019	0908_MW315S_191203	Normal	NSW_0908_PFAAS	<0.0005	0.0077	0.0214	0.0291	0.0357	0.0026	0.0016	<0.0005	<0.0005	<0.0020	<0.0005	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	12 Mar 2020	0908_MW315S_200317	Normal	NSW_0908_PFAASMGMT	<0.0005	0.0076	0.0097	0.0173	0.0212	0.0022	0.0008	<0.0005	<0.0005	<0.002	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	20 May 2020	0908_MW315S_200520	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.03	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	
MW315S	08 Jul 2020	0908_MW315S_200708	Normal	NSW_0908_PFAASMGMT	<0.0005	<0.0003	0.0257	0.0257	0.0440	0.0048	0.0050	<0.0005	<0.0005	<0.002	0.0029	0.0056	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	29 Sep 2020	0908_MW315S_200929	Normal	NSW_0908_PFAASMGMT	<0.002	<0.002	0.018	0.018	0.026	0.002	0.003	<0.002	<0.002	<0.01	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005
MW315S	26 Nov 2020	0908_MW315 S_201126	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.04	0.04	0.17	0.04	0.03	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
MW315S	11 Jan 2021	0908_MW315 S_210111	Normal	NSW_0908_PFAASMGMT	<0.0005	0.0076	0.0254	0.033	0.0428	0.0027	0.0022	<0.0005	<0.0005	<0.002	<0.0005	0.0029	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	25 Mar 2021	0908_MW315 S_210325	Normal	NSW_0908_PFAASMGMT	0.0006	0.0008	0.0681	0.0689	0.103	0.0065	0.0068	<0.0005	<0.0005	<0.002	0.0041	0.0100	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	25 Mar 2021	0908_QC100_210325	Field_D	NSW_0908_PFAASMGMT	0.0006	0.0012	0.0762	0.0774	0.118	0.0070	0.0074	<0.0005	<0.0005	<0.002	0.0034	0.0097	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
MW315S	25 Mar 2021	0908_QC200_210325	Interlab_D	NSW_0908_PFAASMGMT	<0.001	<0.002	0.064	0.064		0.0064	0.0062	<0.001	<0.001	<0.005	0.0023	0.0069	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
MW315S	20 Sep 2021	0908_MW315S_210921	Normal	NSW_0908_PFAASMGMT	0.0019	0.0008	0.0201	0.0209	0.0332	0.0020	0.0016	<0.0005	<0.0005	<0.0020	<0.0005	0.0062	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW315S	14 Jan 2022	0908_MW315S_220114	Normal	NSW_0908_PFAASMGMT	0.0019	<0.0016	0.0248	0.0248	0.0354	0.0024	0.0018	<0.0016	<0.0016	<0.0016	<0.0016	0.0045	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
MW315S	18 Mar 2022	0908_MW315S_220318	Normal	NSW_0908_PFAASMGMT	0.004	0.002	0.026	0.028	0.047	<0.002	<0.002	<0.002	<0.002	0.01	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005	<0.002
MW315S	26 May 2022	0908_MW315S_220526	Normal	NSW_0908_PFAASOMP	<0.01	<0.01	0.02	0.02	0.02	<0.																											

Table T8 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
LOR	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	
PFAS NEMP 2020 Drinking Water	0.56			0.07																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	PFOA	PFOS	PFHxS	Sum PFHxS & PFOS	Sum PFAS	PFBS	PFPeS	PFHpS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	FOSA	MeFOSA	MeFOSAA	MeFOSE	EtFOSA	EtFOSAA	EtFOSE
MW318S	11 May 2023	0908_MW318S_230511	Normal	NSW_0908_PfasSOMP_23	<0.01	<0.01	0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05





Table T8 - Historical Groundwater Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
LOR	0.0002	0.0002	0.0002	0.0002	0.0002	0.0004	0.0005	0.0005	0.0005	0.002	0.0005	0.0004	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0004	0.0004	0.001	0.0005	0.001	0.0005	0.001	0.0005	0.001	0.001			
PFAS NEMP 2020 Drinking Water	0.56			0.07																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															
Location Code	Date	Field ID	Sample Type	Project ID	<0.01	0.05	<0.02	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
POT144	30 Jan 2017	BWS144_300117	Normal	NSW_0908 PFAS	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
POT144	18 Apr 2018	BWS144_GW_18042018	Normal	NSW_0908 PFAS	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT144	18 Apr 2018	BWS144_GW_18042018	Normal	NSW_0908 PFAS	-	-	-	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
POT144	04 Jun 2019	0908_BWS144_190604	Normal	NSW_0908 PFAS	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT144	27 May 2020	0908_POT144_200527	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT144	13 May 2021	0908_POT144_210513	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT144	16 May 2022	0908_POT144_220516	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT144	17 May 2023	0908_POT144_230517	Normal	NSW_0908 PFASOMP 23	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	24 Aug 2016	BWS236_240816	Normal	NSW_0908 PFAS	<0.01	0.05	0.03	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	24 Aug 2016	QC99_240816	Field_D	NSW_0908 PFAS	<0.01	0.05	0.02	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	27 Feb 2017	BWS236_270217	Normal	NSW_0908 PFAS	<0.01	0.06	0.1	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT236	03 Jun 2019	0908_BWS236_190603	Normal	NSW_0908 PFAS	<0.01	0.03	0.06	0.09	0.09	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	28 May 2020	0908_POT236_200528	Normal	NSW_0908 PFASOMP	<0.01	0.04	0.12	0.16	0.16	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	12 May 2021	0908_POT236_210512	Normal	NSW_0908 PFASOMP	<0.01	0.06	0.02	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT236	18 May 2022	0908_POT236_220518	Normal	NSW_0908 PFASOMP	<0.01	0.04	0.04	0.08	0.08	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
POT236	16 May 2023	0908_POT236_230516	Normal	NSW_0908 PFASOMP 23	<0.01	0.03	0.01	0.04	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT257	07 Oct 2016	BWS257_071016	Normal	NSW_0908 PFAS	0.01	0.02	<0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT257	01 Mar 2017	BWS257_010317	Normal	NSW_0908 PFAS	0.02	0.02	<0.02	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POT257	25 May 2020	0908_POT257_200525	Normal	NSW_0908 PFASOMP	0.01	0.03	<0.02	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT257	13 May 2021	0908_POT257_210513	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT257	18 May 2022	0908_POT257_220518	Normal	NSW_0908 PFASOMP	<0.01	0.01	0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT257	16 May 2023	0908_POT257_230516	Normal	NSW_0908 PFASOMP 23	0.02	0.02	<0.01	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT382	12 Nov 2021	0908_POT382_211112	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT382	18 May 2022	0908_POT382_220518	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT382	14 Nov 2022	0908_POT382_221114	Normal	NSW_0908 PFASOMP	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT382	17 May 2023	0908_POT382_230517	Normal	NSW_0908 PFASOMP 23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
POT382	28 Nov 2023	0908_POT382_231128	Normal	NSW_0908 PFASOMP 23	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	

Notes  
 LOR Limit of Reporting  
 Normal Primary sample  
 Field\_D Intra-laboratory duplicate sample  
 Interlab\_D Inter-laboratory duplicate sample





Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																									
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	<0.05	0.66	0.23	0.89	0.95	<0.05	<0.05	<0.05	<0.02	<0.1	<0.05	0.06	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	28 Oct 2020	0908_SW001_201028	Normal	NSW_0908_PFASMGMT	<0.05	0.66	0.23	0.89	0.95	<0.05	<0.05	<0.05	<0.02	<0.1	<0.05	0.08	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	28 Oct 2020	0908_QC100_201028	Field_D	NSW_0908_PFASMGMT	<0.05	0.6	0.25	0.85	0.93	<0.05	<0.05	<0.05	<0.02	<0.1	<0.05	0.08	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	20 Nov 2020	0908_SW001_201120	Normal	NSW_0908_PFASOMP	0.13	5.3	1.67	6.97	8.05	0.16	0.16	0.19	<0.02	<0.1	0.06	0.33	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	20 Nov 2020	0908_QC102_201120	Field_D	NSW_0908_PFASOMP	0.12	6.86	1.68	8.54	9.58	0.15	0.16	0.19	<0.02	<0.1	0.06	0.32	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	20 Nov 2020	0908_QC202_201120	Interlab_D	NSW_0908_PFASOMP	0.06	2.6	1	3.6	-	0.09	0.097	0.082	<0.01	<0.05	0.039	0.18	0.028	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW001	18 Dec 2020	0908_SW001_201218	Normal	NSW_0908_PFASOMP	0.03	1.85	0.39	2.24	2.45	0.03	0.03	0.04	<0.02	<0.1	0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	18 Dec 2020	0908_QC100_201218	Field_D	NSW_0908_PFASOMP	0.03	1.89	0.42	2.31	2.53	0.03	0.03	0.04	<0.02	<0.1	0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	18 Dec 2020	0908_QC200_201218	Interlab_D	NSW_0908_PFASOMP	0.03	1.8	0.44	2.24	-	0.022	0.026	0.035	<0.01	<0.05	0.024	0.072	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW001	21 Dec 2020	0908_SW001_2012211510	Normal	NSW_0908_PFASOMP	0.02	0.81	0.2	1.01	1.07	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012211610	Normal	NSW_0908_PFASOMP	<0.01	0.45	0.09	0.54	0.54	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012211710	Normal	NSW_0908_PFASOMP	<0.01	0.39	0.09	0.48	0.48	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012211810	Normal	NSW_0908_PFASOMP	<0.01	0.49	0.14	0.63	0.65	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012211910	Normal	NSW_0908_PFASOMP	0.01	0.69	0.16	0.85	0.89	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012212010	Normal	NSW_0908_PFASOMP	0.01	0.57	0.14	0.71	0.75	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012212110	Normal	NSW_0908_PFASOMP	0.01	0.62	0.14	0.76	0.79	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012212210	Normal	NSW_0908_PFASOMP	0.01	0.59	0.13	0.72	0.75	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	21 Dec 2020	0908_SW001_2012212310	Normal	NSW_0908_PFASOMP	<0.01	0.44	0.1	0.54	0.54	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220010	Normal	NSW_0908_PFASOMP	<0.01	0.45	0.09	0.54	0.54	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220110	Normal	NSW_0908_PFASOMP	<0.01	0.27	0.06	0.33	0.33	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220210	Normal	NSW_0908_PFASOMP	<0.01	0.36	0.1	0.46	0.46	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220310	Normal	NSW_0908_PFASOMP	<0.01	0.46	0.14	0.6	0.62	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220410	Normal	NSW_0908_PFASOMP	0.01	0.62	0.18	0.8	0.84	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220510	Normal	NSW_0908_PFASOMP	0.02	0.79	0.25	1.04	1.12	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW001	22 Dec 2020	0908_SW001_2012220610	Normal	NSW_0908_PFASOMP	0.02	1.04	0.31	1.35	1.46	<0.02	<0																								





Table T9 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)				
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.01	0.005	0.005	0.01	0.05	0.005	0.01	0.05	
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																														
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																														
PFAS NEMP 2020 Freshwater 99%	19	0.00023																																

Location Code	Date	Field ID	Sample Type	Project ID	0.03	1.23	0.31	1.54	1.70	0.02	0.02	0.03	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW005	22 Dec 2020	0908_SW005_2012221920	Normal	NSW_0908_PFAOSMP	0.03	1.23	0.31	1.54	1.70	0.02	0.02	0.03	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	22 Dec 2020	0908_SW005_2012222020	Normal	NSW_0908_PFAOSMP	0.02	0.97	0.23	1.2	1.26	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	22 Dec 2020	0908_SW005_2012222120	Normal	NSW_0908_PFAOSMP	0.02	0.84	0.23	1.07	1.15	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	22 Dec 2020	0908_SW005_2012222220	Normal	NSW_0908_PFAOSMP	0.02	0.9	0.25	1.15	1.23	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	22 Dec 2020	0908_SW005_2012222320	Normal	NSW_0908_PFAOSMP	0.02	0.91	0.24	1.15	1.23	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	23 Dec 2020	0908_SW005_2012230020	Normal	NSW_0908_PFAOSMP	0.02	0.96	0.25	1.21	1.29	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	23 Dec 2020	0908_SW005_2012230120	Normal	NSW_0908_PFAOSMP	0.02	0.96	0.26	1.22	1.32	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	23 Dec 2020	0908_SW005_2012230220	Normal	NSW_0908_PFAOSMP	0.02	1.33	0.35	1.68	1.84	0.02	0.03	0.03	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	23 Dec 2020	0908_SW005_2012230320	Normal	NSW_0908_PFAOSMP	0.03	1.42	0.37	1.79	1.97	0.02	0.03	0.03	<0.02	<0.1	<0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	23 Dec 2020	0908_SW005_2012230420	Normal	NSW_0908_PFAOSMP	0.02	1.12	0.32	1.44	1.59	0.02	0.02	0.03	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_210129	Normal	NSW_0908_PFAOSMP	0.02	1.07	0.28	1.35	1.55	<0.02	0.02	0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	0.08	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291240	Normal	NSW_0908_PFAOSMP	0.02	1.06	0.23	1.29	1.38	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291340	Normal	NSW_0908_PFAOSMP	0.02	1.05	0.23	1.28	1.35	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291440	Normal	NSW_0908_PFAOSMP	0.02	0.97	0.21	1.18	1.24	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291540	Normal	NSW_0908_PFAOSMP	0.02	1.08	0.24	1.32	1.41	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291640	Normal	NSW_0908_PFAOSMP	0.02	1.04	0.21	1.25	1.31	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291740	Normal	NSW_0908_PFAOSMP	0.02	1.06	0.23	1.29	1.36	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291840	Normal	NSW_0908_PFAOSMP	0.02	0.92	0.2	1.12	1.18	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101291940	Normal	NSW_0908_PFAOSMP	0.02	0.99	0.22	1.21	1.27	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101292040	Normal	NSW_0908_PFAOSMP	0.02	0.95	0.21	1.16	1.22	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101292140	Normal	NSW_0908_PFAOSMP	0.02	0.94	0.2	1.14	1.20	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101292240	Normal	NSW_0908_PFAOSMP	0.02	0.87	0.2	1.07	1.13	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_SW005_2101292340	Normal	NSW_0908_PFAOSMP	0.02	0.96	0.21	1.17	1.23	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_QC101_210129	Field_D	NSW_0908_PFAOSMP	0.02	1.12	0.24	1.36	1.44	<0.02	<0.02	0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW005	29 Jan 2021	0908_QC201_210129	Interlab_D	NSW_0908_PFAOSMP	0.013	0.93	0.19	1.12		<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW005	30 Jan 2021	0908_SW005_2101300040	Normal	NSW_0908_PFAOSMP	0.02	0.95	0.21	1.16	1.22	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	

Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
LOR	0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05	0.05
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																									
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	
SW006	31 Mar 2017	MD6_SW_310317	Normal	NSW_0908_PFA	<0.01	0.03	<0.02	0.03	0.03	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	05 Apr 2017	MD6_SW_050417	Normal	NSW_0908_PFA	0.01	0.07	0.09	0.16	0.17	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	04 May 2017	MD6_SW_040517	Normal	NSW_0908_PFA	<0.01	0.09	0.08	0.17	-	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	01 Jun 2017	MD6_SW_010617	Normal	NSW_0908_PFA	<0.01	0.13	0.22	0.35	0.35	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	20 Jul 2017	MD6_SW_200717	Normal	NSW_0908_PFA	<0.01	0.11	0.06	0.17	0.17	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	12 Apr 2018	MD6_SW_12042018	Normal	NSW_0908_PFA	0.02	0.26	0.16	0.42	0.49	<0.02	<0.02	<0.02	<0.1	0.02	0.03	0.06	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	06 Dec 2018	0908_MD6_SW_181206	Normal	NSW_0908_PFA	0.02	0.83	0.26	1.09	1.24	<0.02	0.02	<0.02	<0.1	0.03	0.06	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	14 Jun 2019	0908_MD6_SW_190614	Normal	NSW_0908_PFA	<0.01	0.44	0.13	0.57	0.57	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	05 Nov 2019	0908_MD6_SW_191105	Normal	NSW_0908_PFA	0.01	0.11	0.32	0.43	0.58	0.03	0.02	<0.02	<0.1	<0.02	0.06	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	02 Jun 2020	0908_SW006_200602	Normal	NSW_0908_PFA	0.02	2.7	0.45	3.15	3.35	<0.02	0.02	<0.02	<0.1	0.06	0.08	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	20 Nov 2020	0908_SW006_201120	Normal	NSW_0908_PFA	0.10	8.81	1.17	9.98	10.8	0.05	0.06	0.09	0.03	0.12	0.30	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	11 May 2021	0908_SW006_210511	Normal	NSW_0908_PFA	0.16	14.3	1.62	15.9	17.0	0.06	0.10	0.14	<0.02	<0.1	0.15	0.38	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	17 Nov 2021	0908_SW006_211117	Normal	NSW_0908_PFA	0.14	72	1.49	13.5	14.5	0.06	0.07	0.10	<0.02	<0.1	0.13	0.44	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	18 May 2022	0908_SW006_220518	Normal	NSW_0908_PFA	0.12	18.8	1.05	19.8	20.8	0.04	0.06	0.14	0.05	<0.1	0.11	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	13 Jul 2022	0908_SW006_220713	Normal	NSW_0908_PFA	0.05	4.04	0.47	4.51	4.93	0.03	0.04	0.03	<0.02	<0.1	0.04	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	08 Nov 2022	0908_SW006_221108	Normal	NSW_0908_PFA	0.07	9.92	0.64	10.6	11.1	0.03	0.05	0.07	<0.02	<0.1	0.07	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW006	08 May 2023	0908_SW006_230508	Normal	NSW_0908_PFA	0.07	6.13	0.64	6.77	7.34	0.04	0.04	0.07	<0.02	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW007	13 Jan 2016	MD7_SW_1312016	Normal	NSW_0908_PFA	0.029	0.852	-	0.852	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW007	15 Jan 2016	MD7_SW_15012016	Normal	NSW_0908_PFA	0.017	0.299	-	0.299	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW007	14 Dec 2016	MD7_SW_141216	Normal	NSW_0908_PFA	0.01	0.98	0.36	1.34	1.51	0.06	0.06	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW007	02 Feb 2017	MD7_SW_020217	Normal	NSW_0908_PFA	0.01	1.26	0.22	1.48	1.5	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW007	09 Feb 2017	MD7_SW_090217	Normal	NSW_0908_PFA	<0.01	0.23	0.06	0.29	0.29	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW007	16 Feb 2017	MD7_SW_16022017	Normal	NSW_0908_PFA	<0.05	1.14	0.26	1.4	1.4	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
SW007	02 Mar 2017	MD7_SW_020317	Normal	NSW_0908_PFA	<0.01	0.57	0.38	0.95	0.97	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
SW007	09 Mar 2017	MD7_SW_090317	Normal	NSW_0908_PFA	0.01	0.81	0.27	1.08	1.13	0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
SW007	16 Mar 2017	MD7_SW_160316	Normal	NSW_0908_PFA	<0.01	1.12	0.44	1.56	1.68	0.05	0.04	<0.02	<0.1	<0.02	0.03																			



Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																										
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	0.10	7.3	0.86	8.16	8.73	0.03	0.05	0.07	<0.02	<0.1	0.09	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
SW007	29 Jan 2021	0908_SW007_210129	Normal	NSW_0908_PFAOSMP	0.10	7.3	0.86	8.16	8.73	0.03	0.05	0.07	<0.02	<0.1	0.09	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291400	Normal	NSW_0908_PFAOSMP	0.13	9.76	1.35	11.1	12.0	0.05	0.08	0.14	<0.02	<0.1	0.10	0.30	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291500	Normal	NSW_0908_PFAOSMP	0.12	9.88	1.22	11.1	11.9	<0.02	0.07	0.12	<0.02	<0.1	0.15	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291600	Normal	NSW_0908_PFAOSMP	0.12	10.2	1.08	11.3	12.0	0.02	0.06	0.12	<0.02	<0.1	0.06	0.24	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291700	Normal	NSW_0908_PFAOSMP	0.10	8.36	0.89	9.25	9.79	<0.02	0.05	0.10	<0.02	<0.1	0.05	0.20	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291800	Normal	NSW_0908_PFAOSMP	0.08	6.9	0.67	7.57	8.10	<0.02	0.03	0.08	<0.02	<0.1	0.04	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101291900	Normal	NSW_0908_PFAOSMP	0.06	6.07	0.54	6.61	6.95	<0.02	0.03	0.05	<0.02	<0.1	0.05	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101292000	Normal	NSW_0908_PFAOSMP	0.07	5.58	0.59	6.17	6.56	<0.02	0.03	0.06	<0.02	<0.1	0.06	0.14	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101292100	Normal	NSW_0908_PFAOSMP	0.06	5.83	0.6	6.43	6.80	0.02	0.03	0.06	<0.02	<0.1	0.04	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101292200	Normal	NSW_0908_PFAOSMP	0.06	5.52	0.53	6.05	6.40	<0.02	0.03	0.06	<0.02	<0.1	0.05	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_SW007_2101292300	Normal	NSW_0908_PFAOSMP	0.04	4.13	0.44	4.57	4.81	<0.02	0.02	0.04	<0.02	<0.1	0.02	0.10	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_QC103_210129	Field_D	NSW_0908_PFAOSMP	0.11	9.64	1.16	10.8	11.5	0.04	0.07	0.10	<0.02	<0.1	0.08	0.24	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	29 Jan 2021	0908_QC203_210129	Interlab_D	NSW_0908_PFAOSMP	0.094	7.2	0.94	8.14	-	0.033	0.051	0.061	<0.01	0.057	0.09	0.21	0.044	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SW007	30 Jan 2021	0908_SW007_2101300000	Normal	NSW_0908_PFAOSMP	0.06	5.13	0.61	5.74	6.17	<0.02	0.03	0.06	<0.02	<0.1	0.05	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300100	Normal	NSW_0908_PFAOSMP	0.06	6.23	0.67	6.9	7.32	<0.02	0.04	0.06	<0.02	<0.1	0.08	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300200	Normal	NSW_0908_PFAOSMP	0.07	6.14	0.72	6.86	7.40	<0.02	0.04	0.07	<0.02	<0.1	0.06	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300300	Normal	NSW_0908_PFAOSMP	0.09	7.16	0.86	8.02	8.65	0.02	0.05	0.08	<0.02	<0.1	0.04	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300400	Normal	NSW_0908_PFAOSMP	0.09	6.78	0.85	7.63	8.21	<0.02	0.04	0.08	<0.02	<0.1	0.04	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300500	Normal	NSW_0908_PFAOSMP	0.09	7.36	0.95	8.31	9.04	0.02	0.06	0.09	<0.02	<0.1	0.08	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300600	Normal	NSW_0908_PFAOSMP	0.09	7.7	0.88	8.58	9.23	0.03	0.05	0.09	<0.02	<0.1	0.04	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300700	Normal	NSW_0908_PFAOSMP	0.09	7.49	0.87	8.36	8.88	<0.02	0.05	0.08	<0.02	<0.1	0.07	0.19	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300800	Normal	NSW_0908_PFAOSMP	0.10	7.66	0.95	8.61	9.20	0.03	0.05	0.09	<0.02	<0.1	0.07	0.21	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101300900	Normal	NSW_0908_PFAOSMP	0.10	8.38	1	9.38	10.0	0.03	0.06	0.09	<0.02	<0.1	0.07	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101301000	Normal	NSW_0908_PFAOSMP	0.12	8.56	1.11	9.67	10.4	0.04	0.06	0.10	<0.02	<0.1	0.08	0.25	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101301100	Normal	NSW_0908_PFAOSMP	0.10	8.43	1.02	9.45	10.1	0.04	0.06	0.09	<0.02	<0.1	0.08	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW007	30 Jan 2021	0908_SW007_2101301200	Normal	NSW_0908_PFAOSMP	0.11	8.6	1.																														

Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides													
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)				
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.01	0.005	0.005	0.01	0.05	0.005	0.01	0.05	
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																														
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																														
PFAS NEMP 2020 Freshwater 99%	19	0.00023																																

Location Code	Date	Field ID	Sample Type	Project ID	0.05	0.96	0.62	1.58	1.87	0.03	0.03	0.06	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.5
SW009	28 Nov 2023	0908_QC111_231128	Field_D	NSW_0908_PFA_SOMP_23	0.05	0.96	0.62	1.58	1.87	0.03	0.03	0.06	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.5	
SW009	28 Nov 2023	0908_QC211_231128	Interlab_D	NSW_0908_PFA_SOMP_23	0.05	0.9	0.68	1.6	1.9	0.03	0.05	0.08	<0.02	<0.02	0.03	0.1	0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.5	
SW011	12 Feb 2016	MD10_SW_12022016	Normal	NSW_0908_PFA_S	0.06	1.38	1.4	2.78	4.28	0.11	0.12	0.1	<0.02	<0.1	0.05	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	12 Feb 2016	QC103_SW_12022016	Field_D	NSW_0908_PFA_S	0.05	1.34	1.38	2.72	4.33	0.11	0.12	0.1	<0.02	<0.1	0.04	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	23 Mar 2017	MD10_SW_230317	Normal	NSW_0908_PFA_S	0.04	1.17	0.54	1.71	1.98	0.04	0.04	0.05	<0.02	<0.1	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	07 Dec 2018	0908_MD10_SW_181207	Normal	NSW_0908_PFA_S	0.03	0.82	0.43	1.25	1.53	0.04	0.05	0.04	<0.02	<0.1	0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	13 Jun 2019	0908_MD10_SW_190613	Normal	NSW_0908_PFA_S	<0.01	0.26	0.28	0.54	0.59	<0.02	<0.02	<0.02	<0.02	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	06 Oct 2019	0908_MD10_SW_191106	Normal	NSW_0908_PFA_SOMP	0.04	1.11	0.66	1.77	2.36	0.07	0.08	0.04	<0.02	<0.1	0.10	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	19 Jun 2020	0908_SW011_200619	Normal	NSW_0908_PFA_SOMP	0.08	3.31	1.01	4.32	5.13	0.09	0.11	0.10	<0.02	<0.1	0.06	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	04 Dec 2020	0908_SW011_201204	Normal	NSW_0908_PFA_SOMP	0.05	2.19	0.7	2.89	3.28	0.05	0.07	0.06	<0.02	<0.1	0.02	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	04 Dec 2020	0908_QC108_201204	Field_D	NSW_0908_PFA_SOMP	0.05	2.14	0.73	2.87	3.28	0.06	0.07	0.07	<0.02	<0.1	0.02	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	04 Dec 2020	0908_QC208_201204	Interlab_D	NSW_0908_PFA_SOMP	0.044	2.4	0.78	3.18	-	0.053	0.06	0.047	<0.01	<0.05	0.037	0.13	0.022	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
SW011	26 May 2021	0908_SW011_210526	Normal	NSW_0908_PFA_SOMP	0.03	1.41	0.45	1.86	2.08	0.03	0.04	0.04	<0.02	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	11 May 2023	0908_SW011_230511	Normal	NSW_0908_PFA_SOMP_23	0.05	2.96	0.58	3.54	3.86	0.03	0.04	0.05	<0.02	<0.1	0.03	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW011	27 Nov 2023	0908_SW011_231127	Normal	NSW_0908_PFA_SOMP_23	0.02	0.48	0.2	0.68	0.75	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW014	20 Dec 2016	MD14_SW_161220	Normal	NSW_0908_PFA_S	<0.01	0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW014	18 Apr 2018	MD14_SW_18042018	Normal	NSW_0908_PFA_S	<0.01	0.14	<0.02	0.16	0.14	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	18 Apr 2018	MD14_SW_18042018	Normal	NSW_0908_PFA_S	-	-	-	0.14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW014	06 Dec 2018	0908_MD14_SW_181206	Normal	NSW_0908_PFA_S	0.02	0.45	0.21	0.66	0.76	<0.02	0.03	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	13 Jun 2019	0908_MD14_SW_190613	Normal	NSW_0908_PFA_S	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	13 Jun 2019	0908_QC120_190613	Field_D	NSW_0908_PFA_S	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	13 Jun 2019	0908_QC220_190613	Interlab_D	NSW_0908_PFA_S	<0.01	<0.02	0.011	0.031	-	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	
SW014	05 Nov 2019	0908_MD14_SW_191105	Normal	NSW_0908_PFA_SOMP	<0.01	0.05	<0.02	0.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	04 Jun 2020	0908_SW014_200604	Normal	NSW_0908_PFA_SOMP	0.03	1.32	0.62	1.94	2.32	0.06	0.07	0.05	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW014	26 Nov 2020	0908_SW014_201126	Normal	NSW_0908_PFA_SOMP	0.06	3.24	0.77	4.01	4.50	0.06	0.07	0.06	<0																						

















Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides												
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)			
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05	0.005	0.01	0.05	
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																													
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																													
PFAS NEMP 2020 Freshwater 99%	19	0.00023																															

Location Code	Date	Field ID	Sample Type	Project ID	0.05	1.08	1.4	2.48	3.07	0.1	0.14	0.05	<0.02	<0.1	0.03	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05
SW059	20 Jul 2017	DD2_SW_200717	Normal	NSW_0908_PFA	0.05	1.08	1.4	2.48	3.07	0.1	0.14	0.05	<0.02	<0.1	0.03	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	12 Apr 2018	DD2_SW_12042018	Normal	NSW_0908_PFA	0.04	0.81	1.14	1.95	2.58	0.13	0.14	0.04	<0.02	<0.1	0.04	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	06 Dec 2018	0908_DD2_SW_181206	Normal	NSW_0908_PFA	0.1	0.91	2.29	3.2	4.63	0.27	0.29	0.09	<0.02	<0.1	0.09	0.53	0.06	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	13 Jun 2019	0908_DD2_SW_190613	Normal	NSW_0908_PFA	0.02	0.14	1.26	1.4	2.55	0.38	0.37	0.02	<0.02	<0.1	0.02	0.32	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	05 Nov 2019	0908_DD2_SW_191105	Normal	NSW_0908_PFA	0.06	1.29	1.49	2.78	3.77	0.19	0.23	0.09	<0.02	<0.1	0.06	0.32	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	04 Jun 2020	0908_SW059_200604	Normal	NSW_0908_PFA	0.12	0.85	4.87	5.72	9.20	0.72	0.84	0.15	<0.02	<0.1	0.22	1.21	0.12	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	13 Nov 2020	0908_SW059_201113	Normal	NSW_0908_PFA	0.06	1.31	1.19	2.5	3.21	0.09	0.10	0.05	<0.02	<0.1	0.08	0.30	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	18 Dec 2020	0908_SW059_201218	Normal	NSW_0908_PFA	0.08	0.87	1.96	2.83	3.88	0.22	0.21	0.08	<0.02	<0.1	0.06	0.36	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220200	Normal	NSW_0908_PFA	0.04	0.72	1.3	2.02	2.63	0.12	0.12	0.05	<0.02	<0.1	0.04	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220300	Normal	NSW_0908_PFA	0.04	0.55	1.2	1.75	2.31	0.11	0.11	0.04	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220400	Normal	NSW_0908_PFA	0.05	0.72	1.36	2.08	2.73	0.11	0.13	0.05	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220500	Normal	NSW_0908_PFA	0.06	0.8	1.5	2.3	3.02	0.13	0.15	0.05	<0.02	<0.1	0.05	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220600	Normal	NSW_0908_PFA	0.05	0.62	1.42	2.04	2.72	0.12	0.14	0.05	<0.02	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220700	Normal	NSW_0908_PFA	0.06	0.91	1.76	2.67	3.51	0.15	0.17	0.06	<0.02	<0.1	0.06	0.30	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220800	Normal	NSW_0908_PFA	0.06	0.84	1.78	2.62	3.48	0.15	0.18	0.06	<0.02	<0.1	0.06	0.31	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012220900	Normal	NSW_0908_PFA	0.07	0.92	1.91	2.83	3.78	0.17	0.19	0.07	<0.02	<0.1	0.07	0.34	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221000	Normal	NSW_0908_PFA	0.07	0.81	2.04	2.85	3.83	0.18	0.20	0.07	<0.02	<0.1	0.07	0.35	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221100	Normal	NSW_0908_PFA	0.07	0.77	2.04	2.81	3.81	0.18	0.20	0.07	<0.02	<0.1	0.07	0.36	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221200	Normal	NSW_0908_PFA	0.08	0.95	2.17	3.12	4.19	0.20	0.21	0.08	<0.02	<0.1	0.08	0.38	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221300	Normal	NSW_0908_PFA	0.08	0.95	2.23	3.18	4.29	0.20	0.22	0.08	<0.02	<0.1	0.08	0.40	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221400	Normal	NSW_0908_PFA	0.09	1.07	2.56	3.63	4.87	0.22	0.24	0.09	<0.02	<0.1	0.09	0.45	0.06	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221500	Normal	NSW_0908_PFA	0.08	1	2.19	3.19	4.31	0.20	0.21	0.08	<0.02	<0.1	0.08	0.42	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221600	Normal	NSW_0908_PFA	0.05	0.75	1.5	2.25	3.01	0.14	0.16	0.06	<0.02	<0.1	0.06	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221700	Normal	NSW_0908_PFA	0.05	0.71	1.37	2.08	2.75	0.12	0.14	0.05	<0.02	<0.1	0.04	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221800	Normal	NSW_0908_PFA	0.04	0.57	1.17	1.74	2.31	0.10	0.12	0.05	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012221900	Normal	NSW_0908_PFA	0.03	0.63	1.19	1.82	2.37	0.10	0.12	0.04	<0.02	<0.1	0.04	0.20	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	
SW059	22 Dec 2020	0908_SW059_2012222000	Normal	NSW_0908_PFA	0.04	0.55	1.03	1.58	2.07	0.09	0.10	0.04	<0.02	<0.1	0.03	0.17																				



Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																									
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	0.10	2.51	1.92	4.43	5.53	0.14	0.16	0.10	<0.02	<0.1	0.10	0.45	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	19 Feb 2021	0908_SW059_210219	Normal	NSW_0908_PFAOSMP	0.10	2.51	1.92	4.43	5.53	0.14	0.16	0.10	<0.02	<0.1	0.10	0.45	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	26 Mar 2021	0908_SW059_210326	Normal	NSW_0908_PFAOSMP	0.04	0.68	0.63	1.31	1.68	0.05	0.05	0.04	<0.02	<0.1	0.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	31 Mar 2021	0908_SW059_210331	Normal	NSW_0908_WQMP_21	0.04	0.91	0.82	1.7	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW059	12 Apr 2021	0908_SW059_210412	Normal	NSW_0908_WQMP_21	0.05	1.3	0.79	2	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW059	27 Apr 2021	0908_SW059_210427	Normal	NSW_0908_PFAOSMP	0.06	1.26	0.94	2.2	2.74	0.07	0.08	0.05	<0.02	<0.1	0.04	0.22	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	11 May 2021	0908_SW059_210511	Normal	NSW_0908_PFAOSMP	0.06	1.28	0.94	2.22	2.73	0.06	0.08	0.06	<0.02	<0.1	0.04	0.18	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	25 Jun 2021	0908_SW059_210625	Normal	NSW_0908_PFAOSMP	0.07	1.08	1.29	2.37	3.03	0.09	0.12	0.07	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	27 Jul 2021	0908_SW059_210727	Normal	NSW_0908_WQMP_21	0.05	1.1	0.92	2.02	2.58	0.08	0.09	0.04	<0.01	<0.05	0.04	0.20	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW059	30 Jul 2021	0908_SW059_210730	Normal	NSW_0908_PFAOSMP	0.06	1.02	1.03	2.05	2.66	0.09	0.09	0.06	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	20 Aug 2021	0908_SW059_210820	Normal	NSW_0908_PFAOSMP	0.13	1.76	2.14	3.9	5.24	0.20	0.24	0.14	<0.02	<0.1	0.10	0.47	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	20 Aug 2021	0908_QC100_210820	Field_D	NSW_0908_PFAOSMP	0.12	1.69	1.81	3.5	4.69	0.17	0.21	0.12	<0.02	<0.1	0.09	0.43	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	20 Aug 2021	0908_QC200_210820	Interlab_D	NSW_0908_PFAOSMP	0.047	0.51	0.96	1.47	-	0.087	0.098	0.028	<0.01	<0.05	0.044	0.17	0.028	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW059	27 Sep 2021	0908_SW059_210927	Normal	NSW_0908_PFAOSMP	0.06	0.88	1.07	1.95	2.58	0.10	0.10	0.06	<0.02	<0.1	0.04	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	11 Oct 2021	0908_SW059_211011	Normal	NSW_0908_WQMP_21	0.19	3.7	2.2	5.9	7.58	0.18	0.26	0.17	<0.01	0.10	0.10	0.54	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW059	25 Oct 2021	0908_SW059_211025	Normal	NSW_0908_PFAOSMP	0.16	2.32	1.78	4.1	5.49	0.18	0.22	0.14	<0.02	<0.1	0.10	0.52	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	15 Nov 2021	0908_SW059_211115	Normal	NSW_0908_PFAOSMP	0.07	1.18	1.16	2.34	3.10	0.13	0.12	0.07	<0.02	<0.1	0.05	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	16 Nov 2021	0908_SW059_211116	Normal	NSW_0908_WQMP_21	0.09	2.2	1.1	3.3	4.22	0.09	0.15	0.11	<0.01	0.07	0.06	0.27	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW059	18 Jan 2022	0908_SW059_220118	Normal	NSW_0908_WQMP_21	0.07	0.88	1.7	2.6	3.6	0.19	0.2	0.09	<0.02	0.03	0.07	0.35	0.04	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW059	07 Mar 2022	0908_SW059_220307	Normal	NSW_0908_WQMP_21	0.04	1.1	0.83	1.9	2.4	0.05	0.07	0.04	<0.02	0.02	0.04	0.16	0.03	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	11 Apr 2022	0908_SW059_220411	Normal	NSW_0908_WQMP_21	0.04	0.98	0.7	1.7	2.1	0.05	0.05	0.05	<0.02	<0.02	0.03	0.12	0.03	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	17 May 2022	0908_SW059_220517	Normal	NSW_0908_PFAOSMP	0.04	0.76	0.74	1.5	1.92	0.05	0.07	0.05	<0.02	<0.1	0.03	0.15	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW059	17 May 2022	0908_QC103_220517	Field_D	NSW_0908_PFAOSMP	0.04	0.8	0.73	1.53	1.94	0.05	0.07	0.05	<0.02	<0.1	0.03	0.15	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	17 May 2022	0908_QC203_220517	Interlab_D	NSW_0908_PFAOSMP	0.05	0.72	0.75	1.5	1.9	0.05	0.06	0.06	<0.02	0.03	0.03	0.13	0.03	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW059	19 Jul 2022	0908_SW059_220719	Normal	NSW_0908_WQMP_21	0.03	0.71	0.35	1.1	1.2	0.03	0.03	0.03	<0.02	<0.02	<0.02	0.07	0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
SW059	17 Oct 2022	0908_SW059_221017	Normal	NSW_0908_WQMP_21	0.04	1.1	0.63	1.8	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW059	09 Nov 2022	0908_SW059_221109	Normal	NSW_0908_PFAOSMP	0.07	1.17	0.88	2.05																											





Table T9 - Historical Surface Water Analytical Results

	PFAS				PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTeDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
LOR	0.002	0.002	0.002	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Drinking Water	0.56			0.07																									
PFAS NEMP 2020 Recreational Water	10			2																									
PFAS NEMP 2020 Freshwater 99%	19	0.00023																											

Location Code	Date	Field ID	Sample Type	Project ID	0.31	7.21	3.9	11.1	14.1	0.35	0.50	0.35	<0.02	0.1	0.18	1.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05		
SW060	18 May 2022	0908_SW060_220518	Normal	NSW_0908_PFA5OMP	0.31	7.21	3.9	11.1	14.1	0.35	0.50	0.35	<0.02	0.1	0.18	1.04	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05			
SW060	12 Jul 2022	0908_SW060_220712	Normal	NSW_0908_WQMP_21	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW060	19 Jul 2022	0908_SW060_220719	Normal	NSW_0908_WQMP_21	0.30	8.6	2.3	11	13	0.23	0.24	0.28	<0.02	0.06	0.1	0.57	0.1	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	
SW060	17 Oct 2022	0908_SW060_221017	Normal	NSW_0908_WQMP_21	0.58	19	5.5	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW060	09 Nov 2022	0908_SW060_221109	Normal	NSW_0908_PFA5OMP	0.60	16.3	6.9	23.2	28.6	0.56	0.92	0.71	<0.02	0.2	0.30	1.80	0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW060	09 Nov 2022	0908_QC109_221109	Field_D	NSW_0908_PFA5OMP	0.62	16.1	7.12	23.2	28.9	0.61	0.68	0.75	<0.02	0.2	0.38	2.14	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW060	09 Nov 2022	0908_QC209_221109	Interlab_D	NSW_0908_PFA5OMP	0.57	16	6	22	27	0.60	0.72	0.62	<0.02	0.21	0.34	1.7	0.25	<0.01	<0.02	<0.02	<0.05	<0.1	<0.5	<0.01	<0.02	<0.02	<0.1	<0.05	<0.02	<0.05	<0.1	<0.02	<0.5	
SW060	20 Jan 2023	0908_SW060_230120	Normal	NSW_0908_WQMP_21	0.17	8	1.8	9.8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SW060	21 Apr 2023	0908_SW060_230421	Normal	NSW_0908_WQMP_21	0.34	6.8	11	17	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.02	-	-	-	-	-	-	
SW060	11 May 2023	0908_SW060_230511	Normal	NSW_0908_PFA5OMP_23	0.79	15	13.4	28.4	38.7	1.66	2.32	0.80	<0.02	0.4	0.57	3.35	0.44	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW060	06 Jul 2023	0908_SW060_230706	Normal	NSW_0908_WQMP_21	1.2	19	14	34	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.02	-	-	-	-	-	-	
SW060	23 Nov 2023	0908_SW060_231123	Normal	NSW_0908_PFA5OMP_23	0.09	1.2	1.96	3.16	4.40	0.22	0.22	0.12	<0.02	<0.1	0.07	0.47	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW062	17 Jun 2014	DD5_WATER	Normal	NSW_0908_PFA5	<0.01	0.11	0.41	0.52	-	0.15	-	-	<0.01	-	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		
SW062	13 Jan 2016	DD5_SW_1312016	Normal	NSW_0908_PFA5	<0.002	0.088	-	0.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW062	14 Dec 2016	DD5_SW_161214	Normal	NSW_0908_PFA5	<0.05	0.76	0.8	1.56	2.06	0.1	0.18	<0.05	<0.1	<0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	12 Apr 2018	DD5_SW_12042018	Normal	NSW_0908_PFA5	0.09	2.69	1.21	3.9	4.64	0.11	0.12	0.09	<0.02	<0.1	0.07	0.22	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	07 Dec 2018	0908_DD5_SW_181207	Normal	NSW_0908_PFA5	0.1	2.64	1.35	3.99	4.86	0.13	0.14	0.1	<0.02	<0.1	0.08	0.26	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	07 Dec 2018	0908_QC110_SW_181207	Field_D	NSW_0908_PFA5	0.1	2.35	1.17	3.52	4.36	0.11	0.15	0.1	<0.02	<0.1	0.06	0.27	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	07 Dec 2018	0908_QC205_SW_181207	Interlab_D	NSW_0908_PFA5	0.07	2	1.1	3.1	-	0.091	0.098	0.061	<0.01	<0.05	0.071	0.19	0.047	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.021	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05
SW062	13 Jun 2019	0908_DD5_SW_190613	Normal	NSW_0908_PFA5	0.03	1.07	0.53	1.6	1.97	0.08	0.1	0.04	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	06 Nov 2019	0908_DD5_SW_191106	Normal	NSW_0908_PFA5OMP	0.06	1.4	0.78	2.18	2.91	0.11	0.14	0.05	<0.02	<0.1	0.09	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	02 Jun 2020	0908_SW062_200602	Normal	NSW_0908_PFA5OMP	0.12	2.63	1.96	4.59	5.85	0.28	0.26	0.06	<0.02	<0.1	0.11	0.36	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	20 Nov 2020	0908_SW062_201120	Normal	NSW_0908_PFA5OMP	<0.01	0.12	0.15	0.27	0.32	0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.03	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	11 May 2021	0908_SW062_210511	Normal	NSW_0908_PFA5OMP	0.09	2.32	1.47	3.79	4.91	0.12	0.14	0.10	<0.02	<0.1	0.13	0.40	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.12	
SW062	17 Nov 2021	0908_SW062_211117	Normal	NSW_0908_PFA5OMP	<0.01	0.08	0.13	0.21	0.25	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	17 Nov 2021	0908_QC211_211117	Interlab_D	NSW_0908_PFA5OMP	<0.01	0.05	0.12	0.17	0.21	0.01	0.01	<0.01	<0.02	<0.02	0.02	0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	16 May 2022	0908_SW062_220516	Normal	NSW_0908_PFA5OMP	<0.01	0.12	0.22	0.34	0.41	<0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW062	07 Nov 2022	0908_SW062_221107	Normal	NSW_0908_PFA5OMP	<0.01	0.13	0.08	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12
SW062	11 May 2023	0908_SW062_230511	Normal	NSW_0908_PFA5OMP_23	<0.01	0.12	0.21	0.33	0.41	0.03	0.02	<0.02	<0.02	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12
SW062	23 Nov 2023	0908_SW062_231123	Normal	NSW_0908_PFA5OMP_23	0.52	10	8.46	18.5	26.6	1.08	1.10	0.70	<0.02	<0.1	0.57	3.50	0.28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	
SW079	14 Jan 2016	TC2_SW_1412016	Normal	NSW_0908_PFA5	0.008	0.11	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SW079	14 Dec 2016	TC2_SW_161214	Normal	NSW_0908_PFA5	0.03	0.52	0.88	1.4	1.78	0.11	0.1	0.05	<0.02	<0.1</																				







Table T9 - Historical Surface Water Analytical Results

	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
LOR	0.002	0.002	0.002	0.01	0.01	0.002	0.01	0.01	0.005	0.02	0.01	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.01	0.01	0.005	0.01	0.01	0.002	0.02	0.01	0.05	0.005	0.01	0.05
PFAS NEMP 2020 Drinking Water	<b>0.56</b>			<b>0.07</b>																										
PFAS NEMP 2020 Recreational Water	<b>10</b>			<b>2</b>																										
PFAS NEMP 2020 Freshwater 99%	19	0.00023																												

Location Code	Date	Field ID	Sample Type	Project ID	0.06	0.95	1.16	2.11	2.80	0.10	0.13	0.06	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW259	30 Jan 2021	0908_SW259_2101300830	Normal	NSW_0908_PFAFASOMP	0.06	0.95	1.16	2.11	2.80	0.10	0.13	0.06	<0.02	<0.1	0.05	0.26	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101300930	Normal	NSW_0908_PFAFASOMP	0.05	0.83	1.01	1.84	2.45	0.09	0.11	0.06	<0.02	<0.1	0.05	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301030	Normal	NSW_0908_PFAFASOMP	0.05	0.96	1.1	2.06	2.71	0.10	0.12	0.07	<0.02	<0.1	0.05	0.23	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301130	Normal	NSW_0908_PFAFASOMP	0.06	1.01	1.15	2.16	2.85	0.10	0.13	0.06	<0.02	<0.1	0.05	0.25	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301230	Normal	NSW_0908_PFAFASOMP	0.06	0.93	1.13	2.06	2.71	0.09	0.11	0.06	<0.02	<0.1	0.05	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301330	Normal	NSW_0908_PFAFASOMP	0.04	0.83	0.85	1.68	2.17	0.07	0.09	0.05	<0.02	<0.1	0.04	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301430	Normal	NSW_0908_PFAFASOMP	0.04	0.75	0.77	1.52	1.97	0.06	0.08	0.04	<0.02	<0.1	0.03	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jan 2021	0908_SW259_2101301530	Normal	NSW_0908_PFAFASOMP	0.05	0.9	0.84	1.74	2.25	0.07	0.09	0.05	<0.02	<0.1	0.04	0.18	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	19 Feb 2021	0908_SW259_210219	Normal	NSW_0908_PFAFASOMP	0.05	1.21	0.92	2.13	2.70	0.09	0.08	0.06	<0.02	<0.1	0.05	0.21	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	26 Mar 2021	0908_SW259_210326	Normal	NSW_0908_PFAFASOMP	0.02	0.43	0.26	0.69	0.81	0.02	0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	23 Apr 2021	0908_SW259_210423	Normal	NSW_0908_PFAFASOMP	0.04	0.76	0.58	1.34	1.70	0.04	0.06	0.04	<0.02	<0.1	0.02	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	23 Apr 2021	0908_QC100_210423	Field_D	NSW_0908_PFAFASOMP	0.09	2.94	1.19	4.13	4.84	0.07	0.10	0.06	<0.02	<0.1	0.08	0.26	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	23 Apr 2021	0908_QC200_210423	Interlab_D	NSW_0908_PFAFASOMP	0.064	2.4	0.87	3.27	-	0.058	0.068	0.036	<0.01	<0.05	0.06	0.18	0.035	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.027	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.05	
SW259	10 May 2021	0908_SW259_210510	Normal	NSW_0908_PFAFASOMP	0.05	0.85	0.58	1.43	1.79	0.06	0.06	0.04	<0.02	<0.1	<0.02	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	25 Jun 2021	0908_SW259_210625	Normal	NSW_0908_PFAFASOMP	0.06	1.11	0.86	1.97	2.51	0.07	0.09	0.05	<0.02	<0.1	0.04	0.20	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	30 Jul 2021	0908_SW259_210730	Normal	NSW_0908_PFAFASOMP	0.06	1.25	0.76	2.01	2.52	0.06	0.07	0.06	<0.02	<0.1	0.04	0.19	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	20 Aug 2021	0908_SW259_210820	Normal	NSW_0908_PFAFASOMP	0.05	0.88	0.7	1.58	2.05	0.06	0.08	0.05	<0.02	<0.1	0.04	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	27 Sep 2021	0908_SW259_210927	Normal	NSW_0908_PFAFASOMP	0.05	1.32	0.78	2.1	2.71	0.09	0.10	0.05	<0.02	<0.1	0.04	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	25 Oct 2021	0908_SW259_211025	Normal	NSW_0908_PFAFASOMP	0.08	1.32	1	2.32	3.08	0.10	0.12	0.07	<0.02	<0.1	0.06	0.29	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	26 Nov 2021	0908_SW259_211126	Normal	NSW_0908_PFAFASOMP	0.03	0.66	0.53	1.19	1.62	0.08	0.06	0.03	<0.02	<0.1	0.04	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	27 May 2022	0908_SW259_220527	Normal	NSW_0908_PFAFASOMP	0.04	0.85	0.43	1.28	1.54	0.03	0.04	0.03	<0.02	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	15 Nov 2022	0908_SW259_221115	Normal	NSW_0908_PFAFASOMP	0.06	1.2	0.78	1.98	2.47	0.06	0.08	0.05	<0.02	<0.1	0.04	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	16 May 2023	0908_SW259_230516	Normal	NSW_0908_PFAFASOMP_23	0.04	0.82	0.87	1.69	2.12	0.08	0.09	0.05	<0.02	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW259	27 Nov 2023	0908_SW259_231127	Normal	NSW_0908_PFAFASOMP_23	<0.01	0.04	0.03	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	
SW600	25 Nov 2022	0908_SW600_221125	Normal	NSW_0908_PFAFASOMP	0.06	1.42	0.69	2.11	2.65	0.06	0.07	0.05	<0.02	<0.1																					





Table T10 - Historical Sediment Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides								
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
SD007	16 Nov 2021	0908_SD007_211116	Normal	NSW_0908_PFAASOMP	<0.0002	0.0471	0.0011	0.0482	0.0487	<0.0002	<0.0002	<0.0002	0.0003	<0.0001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			



Table T10 - Historical Sediment Analytical Results

Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids								PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides											
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)			
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
LOR					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		
SD048	22 Nov 2023	0908_SD048_231122	Normal	NSW_0908_PFASOMP_23	<0.0002	0.0021	0.0005	0.0026	0.0026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD048	22 Nov 2023	0908_QC110_231122	Field_D	NSW_0908_PFASOMP_23	0.0003	0.0156	0.003	0.0186	0.0189	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
SD048	22 Nov 2023	0908_QC210_231122	Interlab_D	NSW_0908_PFASOMP_23	0.0003	0.0085	0.0018	0.01	0.011	<0.0001	0.0001	0.0003	<0.0002	<0.0002	<0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
SD055	23 Jun 2014	DD1_SEDIMENT	Normal	NSW_0908_PFAS	<0.0005	0.008	<0.0005	0.008	-	<0.0005	-	-	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
SD055	26 Jun 2014	QC6_SEDIMENT	Interlab_D	NSW_0908_PFAS	<0.0005	0.0039	0.0003	0.0042	-	<0.0002	-	-	<0.0006	-	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	14 Jan 2016	DD1_SD_14012016	Normal	NSW_0908_PFAS	<0.0005	0.007	-	0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SD055	16 Dec 2016	DD1_SED_161216	Normal	NSW_0908_PFAS	<0.0002	0.0055	0.0015	0.007	0.007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	12 Apr 2018	DD1_SED_13042018	Normal	NSW_0908_PFAS	<0.0002	0.0011	0.0007	0.0018	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	07 Dec 2018	0908_DD1_SD_181207	Normal	NSW_0908_PFAS	0.0004	0.0042	0.0062	0.0104	0.0136	<0.0002	0.0002	<0.0002	0.0009	<0.0001	<0.0002	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	13 Jun 2019	0908_DD1_SD_190613	Normal	NSW_0908_PFAS	<0.0002	0.003	0.0004	0.0034	0.0055	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	05 Nov 2019	0908_DD1_SD_191105	Normal	NSW_0908_PFASOMP	<0.0002	0.0008	0.0006	0.0014	0.0018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	22 May 2020	0908_SD055_200522	Normal	NSW_0908_PFASOMP	0.0003	0.0083	0.0009	0.0092	0.0115	<0.0002	<0.0002	<0.0002	0.0002	<0.0001	0.0005	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	23 Nov 2020	0908_SD055_201123	Normal	NSW_0908_PFASOMP	<0.0002	0.0022	0.0003	0.0025	0.0028	<0.0002	<0.0002	<0.0002	0.0003	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	11 May 2021	0908_SD055_210511	Normal	NSW_0908_PFASOMP	<0.0002	0.0136	0.0023	0.0159	0.0185	<0.0002	<0.0002	<0.0002	0.0011	<0.0001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	16 Nov 2021	0908_SD055_211116	Normal	NSW_0908_PFASOMP	<0.0002	0.0038	0.0011	0.0049	0.0049	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	16 Nov 2021	0908_QC109_211116	Field_D	NSW_0908_PFASOMP	<0.0002	0.0048	0.0013	0.0061	0.0061	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	19 May 2022	0908_SD055_220519	Normal	NSW_0908_PFASOMP	<0.0002	0.0092	0.0007	0.0099	0.0099	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	19 May 2022	0908_QC209_220519	Interlab_D	NSW_0908_PFASOMP	<0.0001	0.01	0.0006	0.011	0.011	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
SD055	10 Nov 2022	0908_SD055_221110	Normal	NSW_0908_PFASOMP	0.0003	0.0323	0.0054	0.0377	0.0423	<0.0002	<0.0002	0.0002	0.0022	<0.0001	0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	10 May 2023	0908_SD055_230510	Normal	NSW_0908_PFASOMP_23	<0.0002	0.0137	0.0022	0.0159	0.0167	<0.0002	<0.0002	0.0003	0.0005	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD055	22 Nov 2023	0908_SD055_231122	Normal	NSW_0908_PFASOMP_23	<0.0002	0.0019	0.0006	0.0025	0.0025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
SD059	19 Jun 2014	DD2_SEDIMENT	Normal																																		

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Location Code	Date	Field ID	Sample Type	Project ID	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids				PFAS - Perfluoroalkyl Carboxylic Acids							PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides									
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTriDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamideacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamideethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamideacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamideethanol (EtFOSE)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR					<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
SD062	13 Jun 2019	0908_DD5_SD_190613	Normal	NSW_0908_PFAAS	<0.0002	0.0303	0.0018	0.0321	0.0321	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	06 Nov 2019	0908_DD5_SD_191106	Normal	NSW_0908_PFAASOMP	<0.0004	0.0054	0.0006	0.006	0.0060	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	02 Jun 2020	0908_SD062_200602	Normal	NSW_0908_PFAASOMP	<0.0004	0.08	0.006	0.086	0.0888	0.0004	0.0004	0.0010	<0.0002	<0.001	<0.0002	0.0006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	20 Nov 2020	0908_SD062_201120	Normal	NSW_0908_PFAASOMP	<0.0002	0.0031	0.0004	0.0035	0.0035	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	11 May 2021	0908_SD062_210511	Normal	NSW_0908_PFAASOMP	<0.0002	0.0312	0.0024	0.0336	0.0343	<0.0002	<0.0002	0.0003	<0.0002	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	17 Nov 2021	0908_SD062_211117	Normal	NSW_0908_PFAASOMP	<0.0002	0.0036	0.0003	0.0039	0.0039	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	16 May 2022	0908_SD062_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0004	0.0004	0.0008	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	07 Nov 2022	0908_SD062_221107	Normal	NSW_0908_PFAASOMP	<0.0002	0.0008	<0.0002	0.0008	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	11 May 2023	0908_SD062_230511	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0003	<0.0002	0.0003	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD062	23 Nov 2023	0908_SD062_231123	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0192	0.0011	0.0203	0.0203	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	14 Jan 2016	TC2_SD_14012016	Normal	NSW_0908_PFAAS	<0.0005	0.0109	-	0.0109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
SD079	14 Dec 2016	TC2_SD_161214	Normal	NSW_0908_PFAAS	<0.0002	0.0008	<0.0002	0.0008	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	12 Apr 2018	TC2_SED_12042018	Normal	NSW_0908_PFAAS	<0.0002	0.0071	0.0011	0.0082	0.0093	<0.0002	<0.0002	0.0011	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	06 Dec 2018	0908_TC2_SD_181206	Normal	NSW_0908_PFAAS	<0.0002	0.0011	<0.0002	0.0011	0.0013	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	06 Dec 2018	0908_TC2_SD_181206	Normal	NSW_0908_PFAAS	-	-	-	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
SD079	13 Jun 2019	0908_TC2_SD_190613	Normal	NSW_0908_PFAAS	<0.0002	0.0063	0.0007	0.007	0.007	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	05 Nov 2019	0908_TC2_SD_191105	Normal	NSW_0908_PFAASOMP	<0.0002	0.0017	0.0004	0.0021	0.0021	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	02 Jun 2020	0908_SD079_200602	Normal	NSW_0908_PFAASOMP	0.0003	0.0597	0.004	0.0637	0.0638	0.0002	<0.0002	0.0006	<0.0002	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	26 Nov 2020	0908_SD079_201126	Normal	NSW_0908_PFAASOMP	<0.0002	0.0271	0.0056	0.0327	0.0338	0.0003	0.0003	0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	11 May 2021	0908_SD079_210511	Normal	NSW_0908_PFAASOMP	<0.0002	0.0079	0.003	0.0109	0.0114	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	12 Nov 2021	0908_SD079_211112	Normal	NSW_0908_PFAASOMP	<0.0002	0.0162	0.0018	0.018	0.0182	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	16 May 2022	0908_SD079_220516	Normal	NSW_0908_PFAASOMP	<0.0002	0.0038	0.0006	0.0044	0.0044	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	07 Nov 2022	0908_SD079_221107	Normal	NSW_0908_PFAASOMP	<0.0002	0.0483	0.007	0.0553	0.0553	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	09 May 2023	0908_SD079_230509	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0363	0.0034	0.0397	0.0405	<0.0002	0.0003	0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	21 Nov 2023	0908_SD079_231121	Normal	NSW_0908_PFAASOMP_23	<0.0002	0.0005	<0.0002	0.0005	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
SD079	21 Nov 2023	0908_QC104_231121	Field_D	NSW_0908_PFAASOMP_23	<0.0002	0.0008	<0.0002	0.0008	0.0008</																									



# Appendix C

## Calibration Certificates



**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8023
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

Declaration
<b>WAM Scientific</b> certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	16/11/2023
<b>Calibration Due</b>	16/05/2024



**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-8142
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	16/11/2023
<b>Calibration Due</b>	16/05/2024

**Certificate of Service and Calibration**  
**Interface Meter**  
**Heron H.Oil**

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	Heron H.Oil Interface Meter (30m)
<b>Serial Number</b>	01-09088
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1

Instrument Check			
Item	Test	Test Passed	Comments
9V Battery	Klein Tools MM300 Multimeter	✓	Battery voltage reading above 7.9V
Battery Box	Check	✓	No damage
Face and Back Plates	Check	✓	No damage
Thumb Screws	Check	✓	Rubber ends intact
Tape Hangar/Protector	Check	✓	No damage
On/Off Button	Operation	✓	Button is functional
Buzzer	Operation	✓	Intermittent tone in H <sub>2</sub> O, solid tone in product
LED Signal Light	Operation	✓	LED light functional – green and red
Probe	Operation/Check	✓	Decontaminated, cleaned and tested
Tape	Condition/Check	✓	Decontaminated and cleaned, no damage
Connection	Check	✓	Probe and link connected correctly and tightly
PCB	Operation	✓	Unit is fully functional
Electronics Panel	Orientation	✓	Correctly aligned

Instrument Readings		
Product	Buzzer	LED Light
H <sub>2</sub> O	Intermittent	Blinking – Red
Petroleum	Solid	Steady – Red

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The interface meter was decontaminated, cleaned and tested with a mixture of tap water and petrol, shielded from ambient light.

<b>Checked By</b>	[REDACTED]
<b>Calibration Date</b>	16/11/2023
<b>Calibration Due</b>	16/05/2024

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Pro Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	22G103295
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	29.9	30.1	29.9	°C
pH	pH 4.00	386466	4.01	4.15	4.01	pH
pH	pH 7.00	387329	7.00	7.07	7.00	pH
Conductivity	2760 µs/cm at 25°C	388521	2760	3121	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	218.0	222.5	218.0	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	0.2	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	87.6	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	16/11/2023
<b>Calibration Due</b>	16/05/2024

<b>Company Name</b>	WAM Scientific
<b>Office Address</b>	26 Bungarra Crescent, Chipping Norton NSW 2170
<b>Phone Number</b>	+61 405 241 484
<b>Contact Name</b>	[REDACTED]
<b>Instrument</b>	YSI Pro Plus Water Quality Meter w/ 1m Quatro Cable
<b>Serial Number</b>	23G103458
<b>Client Name</b>	[REDACTED] (AECOM Australia Pty Ltd)
<b>Project Number</b>	60612562_2.1
<b>Comments</b>	-

**Instrument Check**

Item	Test	Test Passed	Comments
2 x Alkaline C-size Batteries	Klein Tools MM300 Multimeter	✓	Both batteries reading above 2.9V
Battery Saver Function	Operation	✓	Automatically turns off after 60 minutes if idle
Unit Display	Operation	✓	Screen visible, no damage
Keypad	Operation	✓	Responsive, no damage
Connection Port and Cable	Condition/Check	✓	Clean, no damage
Monitor Housing	Condition/Check	✓	No damage
Firmware	Version	✓	4.0.0
pH Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
pH millivolts for pH 7.00	Calibration	✓	pH 7.00 calibration range between 0 mV ± 50 mV
pH millivolts for pH 4.00	Calibration	✓	pH 4 mV range +165 to +180 from 7 buffer mV value
pH slope	Calibration	✓	Range between 55 to 60 mV/pH (ideal value 59 mV)
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
ORP Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
ORP Reading	Calibration	✓	Within ± 80 mV of reference Zobell Reading
Response time < 90 seconds	Calibration	✓	Responds to correct value within 90 seconds
Conductivity/Temp Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
Conductivity Cell	Calibration	✓	Conductivity cell constant 5.0 ± 1.0 in GLP file
Clean Sensor Readings	Calibration	✓	Clean sensor reads less than 3 uS/cm in dry air
Dissolved Oxygen Probe	Condition/Calibration	✓	Calibrated and conforms to manufacturer's specs
DO Cap	Condition/Calibration	✓	1.25 mil PE membrane (yellow membrane)
DO Sensor in Use	Condition	✓	Polarographic DO sensor
DO Sensor Value	Calibration	✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA

**Instrument Readings**

Parameter	Standard Used	Reference No.	Calibration Value	Observed	Actual	Units
Temperature	Centre 370 Thermometer	Room Temp.	29.9	30.7	29.9	°C
pH	pH 4.00	386466	4.01	4.16	4.01	pH
pH	pH 7.00	387329	7.00	7.08	7.00	pH
Conductivity	2760 µs/cm at 25°C	388521	2760	3067	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	380835/382785	218.0	223.5	218.0	mV
Zero Dissolved O <sub>2</sub>	NaSO <sub>3</sub> in Distilled H <sub>2</sub> O	389912	0.0	0.2	0.0	%
100% Dissolved O <sub>2</sub>	100% Air Saturated H <sub>2</sub> O	Fresh Air	100.0	108.7	100.0	%

**Declaration**

**WAM Scientific** certifies that the above instrument was successfully tested according to manufacturer's standards and all necessary checks were conducted to ensure the instrument was fully operational prior to dispatch. The calibration data supplied was obtained in accordance with manufacturer's specifications using solutions of known values.

<b>Calibrated By</b>	[REDACTED]
<b>Calibration Date</b>	16/11/2023
<b>Calibration Due</b>	16/05/2024

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MH + JIC

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC		
Make and Model:	YSI QUATRO, PROQUATRO		
Serial Number:	236103458		

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:	20/11/23 1030am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	/	/	2707	/	/
Calibration Reading:	/	/	2696	/	/
Calibration Temperature:	/	/	23.8	/	/

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	20/11/23 1030am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.01	7.00	23.8	0	/
Bump Test Reading:	3.99	7.05	2707	0.03	/
Bump Test Temperature:	24.0	23.0	24.90	23.9	/

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

NA.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
 \_\_\_\_\_  
 Fieldwork Staff Signature

20/11/23  
 \_\_\_\_\_  
 Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MH + BV

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.


INSTRUMENT DETAILS	
Supplier:	WAM
Make and Model:	YSI Pro Quattro
Serial Number:	... 458

CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	/	/	/	/	/
Calibration Reading:	/	/	/	/	/
Calibration Temperature:	/	/	/	/	/

ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:	21/11/23 7:30am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.02	4.00	2496	0	/
Bump Test Reading:	7.07	4.08	2456	0.06	/
Bump Test Temperature:	20.5	20.8	19.0	20.8	/

**COMMENTS**  
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

*(Large empty area for handwritten comments)*

Approval and Distribution	
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.	
 _____ Fieldwork Staff Signature	21/11/23 _____ Date
Distribution: Project Central File	



ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MH + JK

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS	
Supplier:	WAM SCIENTIFIC
Make and Model:	PRO QUATRO ISI Professional Series
Serial Number:	22G103295

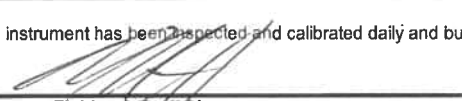
CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
Date and Time:	<del>21/11/23 7:33</del> 7:54				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	/	/	2549	/	/
Calibration Reading:	/	/	2548	/	/
Calibration Temperature:	/	/	20.9	/	/

ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
Date and Time:	21/11/23 7:33am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.02	4.00	2549	0.0	/
Bump Test Reading:	7.06	4.01	2290	0.03	/
Bump Test Temperature:	20.8	21.0	20.0	20.7°C	/

**COMMENTS**  
 Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.


21/11/23  
 \_\_\_\_\_  
 Fieldwork Staff Signature Date

Distribution: Project Central File

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

<b>Project Name:</b>	OMP	<b>Project Number:</b>	606162562
<b>Project Location:</b>	WLM	<b>Client:</b>	DoD
<b>PM Name:</b>	GT	<b>Fieldwork Staff Name:</b>	MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

<b>Supplier:</b>	WQM
<b>Make and Model:</b>	YSI Pro quattro
<b>Serial Number:</b>	458

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

<b>Date and Time:</b>					
<b>Parameter</b>	<b>Acidity</b>		<b>Conductivity</b>	<b>Dissolved Oxygen</b>	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>	/		/	/	
<b>Calibration Reading:</b>	/		/	/	
<b>Calibration Temperature:</b>	/		/	/	

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

<b>Date and Time:</b>	22/11/23 @ 0635				
<b>Parameter</b>	<b>Acidity</b>		<b>Conductivity</b>	<b>Dissolved Oxygen</b>	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>	7.00	4.01	2760	0	/
<b>Bump Test Reading:</b>	7.04	4.01	2813	0.04	/
<b>Bump Test Temperature:</b>	24.9	25.2	25.4	25.1	/

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

\_\_\_\_\_  
Fieldwork Staff Signature

22/11/23  
\_\_\_\_\_  
Date

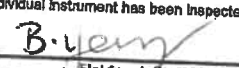
Distribution: Project Central File



ANZ  
**FQM - Water Quality Meter Calibration Record**

**AECOM**

Q4AN(EV)-410-FM1

Project Name:	OMP		Project Number:	606162562	
Project Location:	WLM		Client:	DoD	
PM Name:	CT		Fieldwork Staff Name:	B.U S.H	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM Scientific				
Make and Model:	Pro Quatro ~ Professional Series				
Serial Number:	22C103295				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	22/11/23 7:28AM				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.00	4.00	2707	0	
Bump Test Reading:	7.07	4.06	2698	0.14	
Bump Test Temperature:	23.8	24.2	24	23.7	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.3; font-size: 4em;">/</div>					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 Fieldwork Staff Signature			22/11/23 Date		
Distribution: Project Central File					

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	MH + JC

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAM SCIENTIFIC
Make and Model:	PROQUATRO, PROFESSIONAL SERIES
Serial Number:	234103458

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	23/11/23, 7:00am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.01	7.00	2865	0	
Bump Test Reading:	4.11	7.10	<del>2865</del> 2930	0.03	
Bump Test Temperature:	26.4	26.3	<del>26.8</del>	26.7	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided

NA

**Approval and Distribution**


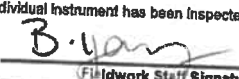
Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
Fieldwork Staff Signature

23/11/23  
Date

Distribution: Project Central File

ANZ  
**FQM - Water Quality Meter Calibration Record**

Project Name:	OMP	Project Number:	606162562		
Project Location:	WLM	Client:	Dod		
PM Name:	GT	Fieldwork Staff Name:	S.H BM		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM Scientific				
Make and Model:	Pro Quatro - Professional Series				
Serial Number:	22G103295				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	23/11/23 7:42am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.01	4.00	2655	0.10	
Bump Test Reading:	7.04	4.04	2681	0.11	
Bump Test Temperature:	25.1	24.5	23.2	24.1	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
 (Fieldwork Staff) Signature			23 / 11 / 23 Date		
Distribution: Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	JK + MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WLM SCIENTIFIC
Make and Model:	PROQUANTO, PROFESSIONAL SERIES
Serial Number:	236108458

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	24/11/23 7:00am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4.01	7	2813	0	
Bump Test Reading:	4.14	7.13	2873	0.03	
Bump Test Temperature:	27.0	26.4	26.4	27.5	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

N/A

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

 \_\_\_\_\_ 24/11/23 \_\_\_\_\_  
 Fieldwork Staff Signature Date

Distribution: Project Central File

ANZ  
**FQM - Water Quality Meter Calibration Record**

Project Name:	OMP		Project Number:	606162562	
Project Location:	WLM		Client:	DoD	
PM Name:	GT		Fieldwork Staff Name:	S.H B.4	
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
Supplier:	WAM Scientific				
Make and Model:	Pro Quattro - Professional Series				
Serial Number:	22G103295				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
Date and Time:	24/11/23 7:30am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.00	4.01	2707	0.0	
Bump Test Reading:	7.04	4.06	2721	0.12	
Bump Test Temperature:	24.0	24.8	24.3		
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
S.H			24/11/23		
Fieldwork Staff Signature			Date		
Distribution: Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	VK+MH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAMSCIENTIFIC
Make and Model:	PRO QUATRO PROFESSIONAL SERIES
Serial Number:	23G103458

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:	27/11/23 9:40 am				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	7.00	4.01	2707	0	
Bump Test Reading:	7.16	4.13	2738	0.04	
Bump Test Temperature:	24.2	24.1	24.0	24.3	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

NA.

**Approval and Distribution**

Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
Fieldwork Staff Signature

27/11/23  
Date

Distribution: Project Central File



ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

<b>Project Name:</b>	OMP	<b>Project Number:</b>	608162562		
<b>Project Location:</b>	WLM	<b>Client:</b>	DoD		
<b>PM Name:</b>	GT	<b>Fieldwork Staff Name:</b>	[REDACTED]		
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.					
<b>INSTRUMENT DETAILS</b>					
<b>Supplier:</b>	WAM Scientific				
<b>Make and Model:</b>	Pro Quatro - Professional Series				
<b>Serial Number:</b>	220103295				
<b>CALIBRATION</b>					
<b>CALIBRATE WITH CALIBRATION SOLUTIONS</b>					
<b>Date and Time:</b>					
<b>Parameter</b>	<b>Acidity</b>		<b>Conductivity</b>	<b>Dissolved Oxygen</b>	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>			2760		
<b>Calibration Reading:</b>			24.6		
<b>Calibration Temperature:</b>			2760		
<b>ONGOING CHECKS</b>					
<b>BUMP TEST WITH CALIBRATION SOLUTION</b>					
<b>Date and Time:</b>	27/11/23 9:00am				
<b>Parameter</b>	<b>Acidity</b>		<b>Conductivity</b>	<b>Dissolved Oxygen</b>	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>	7.00	4.01	2707	<del>0.10</del>	
<b>Bump Test Reading:</b>	7.08	4.08	2823	0	
<b>Bump Test Temperature:</b>	24.2	25	24.5	24.3	
<b>COMMENTS</b>					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
<b>Approval and Distribution</b>					
<input checked="" type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.					
B. Yarral		27/11/23			
Fieldwork Staff Signature		Date			
<b>Distribution:</b> Project Central File					

ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

Project Name:	OMP	Project Number:	606162562
Project Location:	WLM	Client:	DoD
PM Name:	GT	Fieldwork Staff Name:	K JMH

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

**INSTRUMENT DETAILS**

Supplier:	WAMSCIENTIFIC
Make and Model:	PROQUATRO, PROFESSIONAL SERIES
Serial Number:	236... 458

**CALIBRATION**

**CALIBRATE WITH CALIBRATION SOLUTIONS**

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

**ONGOING CHECKS**

**BUMP TEST WITH CALIBRATION SOLUTION**

Date and Time:					
28/11/23 7:45					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:	4	7	<del>2589</del>	0	
Bump Test Reading:	4.11	7.16	2589	0.19	
Bump Test Temperature:	22.3	22.4	22.4	22.4	

**COMMENTS**

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

N/A

**Approval and Distribution**

Each Individual Instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

  
Fieldwork Staff Signature

28/11/23  
Date

Distribution: Project Central File



ANZ

**FQM - Water Quality Meter Calibration Record**

Q4AN(EV)-410-FM1

<b>Project Name:</b>	OMP	<b>Project Number:</b>	606162562
<b>Project Location:</b>	WLM	<b>Client:</b>	DoD
<b>PM Name:</b>	GT	<b>Fieldwork Staff Name:</b>	JK + MH

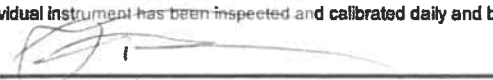
This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS	
<b>Supplier:</b>	WAMSCIENTIFIC
<b>Make and Model:</b>	PROQUATRO, PROFESSIONAL SERIES
<b>Serial Number:</b>	234.. 295

CALIBRATION					
CALIBRATE WITH CALIBRATION SOLUTIONS					
<b>Date and Time:</b>					
<b>Parameter</b>	Acidity		Conductivity	Dissolved Oxygen	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>					
<b>Calibration Reading:</b>					
<b>Calibration Temperature:</b>					

ONGOING CHECKS					
BUMP TEST WITH CALIBRATION SOLUTION					
<b>Date and Time:</b>	28/11/23 7:00				
<b>Parameter</b>	Acidity		Conductivity	Dissolved Oxygen	
<b>Units</b>	pH	pH	µS/cm	ppm	ppm
<b>Calibration Standard Concentration:</b>	4	7		0	
<b>Bump Test Reading:</b>	4.06	7.12	2570	0.13	
<b>Bump Test Temperature:</b>	22.3	22.3	22.5	22.5	

COMMENTS					
Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.					
NA					

Approval and Distribution	
<input type="checkbox"/> Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.	
 _____ Fieldwork Staff Signature	28/11/23 _____ Date
<b>Distribution:</b> Project Central File	

# Appendix D

## Analytical Data Validation

## DATA VALIDATION REPORT

Project number:	60612562	Validation by:	NT/JR	Date:	17/01/2024
Client:	Department of Defence	Data verified by:	BE/ST	Date:	22/09/2023
Site:	RAAF Base Williamtown				
Matrix type:	Groundwater, Surface Water and Sediment				
Primary samples:	92 Groundwater samples, 21 Surface Water samples and 25 Sediment samples				
Laboratory:	Primary: ALS, Secondary: Envirolab				
Lab reference:	ALS: ES2341289, ES2341290, ES2341291, ES2341292, ES2341293, ES2341294, ES2341295, ES2341296, ES2341297, ES2341298, ES2341299, ES2341300. Envirolab: 338971.				
Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication to decision-making on the project.				
<b>Field Quality Assurance and Quality Control</b>					
Field DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).				
Sampling personnel	Sampling was conducted between 20/11/2023 and 28/11/2023 by suitably qualified and experienced AECOM Environmental Scientists and Engineers.				
Sampling Methodology	<p>All water and sediment samples were collected in accordance with the methodology outlined in the SAQP (AECOM, 2023), with the exception of MW241S which was sampled with a bailer as a result of a miscommunication.</p> <p>After each sample was collected, reusable equipment was decontaminated using Liquinox and potable water, and the consumables (nitrile gloves and HydraSleeve™ material) were disposed of in waste bins.</p>				
Chain of Custody (COC)	All samples collected were reported on the Chain of Custody documents (COC) and subsequent email amendments and analysed for requested analytes.				
Rinsate Blank	Rinsate blank samples were collected at a frequency of 1 per day of sampling per sampling team where equipment was re-used and decontaminated between sample points. Rinsate blank samples were either collected from the final rinse of the interface probe or the trowel, using laboratory-supplied de-ionised water.				
Frequency of field QC	<p>Field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected above the required frequency of 1 in 10 primary samples (10%), for water and soil samples collectively. Overall, 15 field duplicates and 15 field triplicates were collected for 138 primary samples, these comprised:</p> <ul style="list-style-type: none"> <li>• 12 water field duplicates and 12 water field triplicates were collected for 113 primary water samples.</li> <li>• 3 sediment field duplicates and 3 sediment field triplicates were collected for 25 primary sediment/soil samples in total.</li> </ul>				
Handling and preservation	<p>All samples were received at the laboratory in appropriate containers at 9.0°C to 12.0°C (with ice present), outside the recommended range (&lt;6°C). Given that PFAS are non-volatile, and that samples were immediately cooled with ice to below the ambient groundwater and surface water temperatures recorded at the time of sampling (18.3°C - 29.3°C), the elevated temperature is not considered to impact analytical results.</p>				
Calibration of equipment	Measurements of water geochemical parameters were undertaken using YSI Professional Plus water quality meters, which were calibrated by the supplier prior to use, in accordance with the manufacturer's instructions and bump tested daily by the field personnel. Measurements of depth to groundwater were undertaken using interface probes, which were serviced by the supplier prior to use.				

## DATA VALIDATION REPORT

All equipment calibration and service certificates are presented in Appendix C.

### Laboratory QA/QC

Laboratory DQOs and DQIs	The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).
Tests requested/reported	<p>All samples were analysed for per- and polyfluoroalkyl substances (PFAS) extended suite, at the standard level of detection.</p> <p>All sample requests for analysis are reported on the Chain of Custody (COC) and subsequent email amendments.</p>
Holding time compliance	All samples were extracted and analysed by the laboratory within the recommended holding times.
Laboratory accreditation	The primary laboratory analysis was conducted by ALS Environmental Pty Ltd (Sydney) a National Association of Testing Authorities (NATA) accredited laboratory (Accreditation No. 825). The secondary samples were analysed at Envirolab Services, also a NATA accredited laboratory (accreditation number 2901).
Frequency of laboratory QC	The primary laboratory ALS reported a sufficient frequency of quality control samples to assess whether the results have been reported with acceptable accuracy and precision.
Method Blank	All method blank concentrations were reported <LOR (limit of reporting) for the analytes tested, meeting the project requirements. This is presented in the Quality Control Reports for both laboratories.
Laboratory duplicate RPDs	The reported laboratory duplicate's Relative Percentage Differences (RPDs) were within laboratory control limits. The laboratory duplicate RPDs are presented in the Quality Control Reports for both laboratories.
LCS recovery	Laboratory control spike (LCS) recoveries were within control limits. This is presented in the Quality Control Reports for both laboratories.
Matrix spike recovery	<p>Matrix spike (MS) recoveries were within control limits with the exception of:</p> <p>Non-determined MS recoveries:</p> <ul style="list-style-type: none"> <li>• ES2341289: Perfluorooctane sulfonic acid (PFOS), 0908_SD600_231127</li> <li>• ES2341295: Perfluorooctane sulfonic acid (PFOS), anonymous non-AECOM sample</li> <li>• ES2341297: Perfluorooctane sulfonic acid (PFOS), anonymous non-AECOM sample</li> <li>• ES2341299: Perfluorooctane sulfonic acid (PFOS), anonymous non-AECOM sample and 0908_SD062_231123</li> </ul> <p>These non-determinations were due to background levels being greater than or equal to four times spike levels, which do not reflect method bias or affect data interpretation.</p>
Surrogate spike recovery	The reported surrogate spike recoveries were within laboratory control limits.

### QA/QC Data Evaluation

Comparison of Field Observations and Laboratory Results	No anomalies between field observations and analytical results were noted.
---	--

## DATA VALIDATION REPORT

### Anomalous data / Repeat Analysis

Following the reporting of PFAS concentrations which were first-time detections at MW271D, and first-time detections and new ecological exceedance at MW230S, the primary laboratory was requested to repeat the analysis. The repeat analysis results for MW271D had no reportable PFAS detections, while the repeat analysis results for MW230S confirmed the presence of some but not all of the originally reported PFAS detections.

The table below summarises concentration differences between the original and repeat analysis.

	0908_MW271D_231127		0908_MW230S_231127	
	Original	Repeat	Original	Repeat
Perfluorooctane sulfonic acid (PFOS)	no change		0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	0.01	<0.01	0.02	0.01
Perfluorobutane sulfonic acid (PFBS)	0.03	<0.02	no change	
Sum of PFOS and PFHxS (calculated)	0.01	<0.01	0.03	0.01
Sum of PFAS (calculated)	0.04	<0.01	0.03	0.01

Given the originally reported PFAS concentrations were at or close to the limit of reporting, and the primary laboratory did not identify any procedural or analytical errors pertaining to their analysis, the most conservative, originally reported concentrations have been retained and used in the assessment.

### Data transcription

A check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and the tables generated by AECOM.

### Limits of reporting

With the exception of the PFAS NEMP Freshwater 99% species protection (HEPA 2020) values for PFOS, the laboratory LORs were sufficiently low to enable assessment against adopted guideline criteria.

### Rinsate Blank sample results

The concentrations of PFAS in the Rinsate Blank samples (Table D3) were below the LOR, indicating decontamination procedures were adequate.

### RPDs for Field Duplicates / Triplicates

RPDs for field duplicates (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were reported within acceptable limits ( $\leq 30\%$ , or  $\leq 50\%$  for results 10-20 x LOR, or No Limit for results  $< 10 \times$  LOR), with the exception of:

#### Intra-laboratory duplicates (Field Duplicates) RPDs

- SW079/QC102: RPDs ranging between 177% and 185% for various PFAS.
- SW048/QC108: RPDs ranging between 112% and 127% for various PFAS.
- SD048/QC110: RPDs ranging between 143% and 153% for various PFAS.

#### Inter-laboratory duplicates (Field Triplicates) RPDs

- SW079/QC202: RPDs ranging between 188% and 195% for various PFAS.
- SW048/QC208: RPDs ranging between 80% and 131% for various PFAS.
- SD048/QC210: RPDs ranging between 113% and 124% for various PFAS.

The elevated RPDs for groundwater and surface water duplicate pairs were generally marginally above acceptable limits and generally within the same order of magnitude, and therefore considered acceptable.

The elevated RPDs for sediment are likely to be attributed to the heterogeneous nature of the sediment sampled, and therefore are considered acceptable.

## DATA VALIDATION REPORT

Where required for quantitative purposes, the highest concentrations from the primary and duplicate pairs were used in the report.

### Overall Assessment

Data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

#### Attached:

Table D1 – Water Duplicate RPDs

Table D2 – Soil and Sediment Duplicate RPDs

Table D3 – Rinsate Blank Results

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2341298		ES2341298		RPD	ES2341298		338971		RPD	ES2341299		ES2341299		RPD	ES2341299		338971		RPD	ES2341298		
	Field ID	0908_MW162D_231121		0908_QC100_231121		0908_MW162D_231121		0908_QC200_231121			0908_SW079_231121		0908_QC102_231121			0908_SW079_231121		0908_QC202_231121			0908_MW257D_231121		
		Matrix Type	Water			Water		Water			Water		Water			Water		Water			Water		
			Date	21 Nov 2023		21 Nov 2023		21 Nov 2023			21 Nov 2023		21 Nov 2023			21 Nov 2023		21 Nov 2023			21 Nov 2023		
Unit	LOR																						
<b>PFAS</b>																							
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.02	<0.01	nc	0.02	<0.01	nc	<0.01	nc	<0.01						
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.46	0.02	<b>183</b>	0.46	<0.01	nc	<0.01	nc	<0.01						
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.33	0.02	<b>177</b>	0.33	0.01	<b>188</b>	<0.01	nc	<0.01						
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.79	0.04	<b>181</b>	0.79	0.01	<b>195</b>	<0.01	nc	<0.01						
Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.03	0.04	<b>185</b>	1.03	0.03	<b>189</b>	<0.01	nc	<0.01						
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																							
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	<0.02	nc	0.03	<0.01	nc	<0.01	nc	<0.02						
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	<0.02	nc	0.03	<0.01	nc	<0.01	nc	<0.02						
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.02	<0.02	nc	0.02	<0.01	nc	<0.01	nc	<0.02						
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	nc	<0.02						
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																							
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.2	nc	<0.1	nc	<0.1						
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.03	<0.02	nc	0.03	<0.02	nc	<0.02	nc	<0.02						
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.09	<0.02	nc	0.09	<0.01	nc	<0.01	nc	<0.02						
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.02	<0.02	nc	0.02	<0.01	nc	<0.01	nc	<0.02						
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.01	nc	<0.02						
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	nc	<0.02						
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	nc	<0.02						
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.05	nc	<0.02						
Perfluorotridecanoic acid (PFTriDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.1	nc	<0.02						
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.5	nc	<0.05						
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																							
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.01	nc	<0.05						
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	nc	<0.05	0.01	nc	<0.05	<0.05	nc	<0.05	0.02	nc	<0.02	nc	<0.05						
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.02	nc	<0.05						
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.02	nc	<0.05						
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																							
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.1	nc	<0.02						
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	nc	<0.05						
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	nc	<0.02						
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	nc	<0.05						
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.1	nc	<0.05						
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	nc	<0.02						
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.5	nc	<0.05						

**Notes**  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2341298		ES2341298		338971		ES2341298		ES2341298		ES2341298		338971		ES2341299		ES2341299		
	Field ID	0908_QC101_231121	0908_MW257D_231121		0908_QC201_231121		0908_MW169D_231122		0908_QC106_231122		0908_MW169D_231122		0908_QC206_231122		0908_SW048_231122		0908_QC108_231122		
		Matrix Type	Water	Water		Water		Water		Water		Water		Water		Water			
		Date	21 Nov 2023	RPD	21 Nov 2023	21 Nov 2023	RPD	22 Nov 2023	22 Nov 2023	RPD	22 Nov 2023	22 Nov 2023	RPD	22 Nov 2023	22 Nov 2023	RPD	22 Nov 2023	22 Nov 2023	RPD
Unit	LOR																		
<b>PFAS</b>																			
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	0.01	0.06	143
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	nc	<0.01	<0.01	nc	0.04	0.04	0	0.04	0.04	0	0.04	0.04	nc	0.17	0.6	112
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	nc	<0.01	<0.01	nc	0.05	0.05	0	0.05	0.05	0	0.05	0.05	nc	0.18	0.81	127
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	nc	<0.01	<0.01	nc	0.09	0.09	0	0.09	0.09	0	0.09	0.09	nc	0.35	1.41	120
Sum of PFAS	µg/L	0.01	<0.01	nc	<0.01	<0.01	nc	0.09	0.09	0	0.09	0.11	20	0.46	1.87	20	0.46	1.87	121
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																			
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	0.02	0.08	120
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	0.02	0.07	111
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	0.05	nc
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																			
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.02	nc	<0.1	<0.1	nc
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	0.03	nc
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	0.02	nc	0.02	nc	nc	0.06	0.14	80
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	0.03	nc
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.01	nc	<0.02	<0.02	nc
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.05	nc	<0.02	<0.02	nc
Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
Perfluorotetradecanoic acid (PFTTeDA)	µg/L	0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.05	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.01	nc	<0.05	<0.05	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.02	nc	<0.05	<0.05	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																			
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.1	nc	<0.02	<0.02	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.1	nc	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.5	nc	<0.05	<0.05	nc

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold



Table D1 - Water Duplicate RPDs

	Unit	LOR	Lab Report Number		RPD	ES2341298		RPD	ES2341298		RPD	ES2341298		RPD	ES2341298		RPD	ES2341298	
			0908_SW048_231122	338971		0908_MW156D_231123	ES2341298		0908_QC212_231123	ES2341298		0908_MW132D_231123	ES2341298		0908_QC103_231123	ES2341298			
			Field ID	0908_QC208_231122		0908_QC112_231123	0908_QC212_231123		0908_QC103_231123	0908_MW132D_231123		0908_QC103_231123	0908_MW132D_231123						
			Matrix Type	Water		Water	Water		Water	Water		Water							
Date	22 Nov 2023	22 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	
<b>PFAS</b>																			
Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.01	0.05	133	<0.01	<0.01	nc	<0.01	<0.01	nc	0.02	0.02	0	0.02				
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.17	0.62	<b>114</b>	0.01	0.01	0	0.01	<0.01	nc	0.78	0.74	5	0.78				
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.18	0.87	<b>131</b>	<0.01	<0.01	nc	<0.01	<0.01	nc	0.23	0.2	14	0.23				
Sum of PFHxS and PFOS	µg/L	0.01	0.35	1.5	<b>124</b>	0.01	0.01	0	0.01	<0.01	nc	1.01	0.94	7	1.01				
Sum of PFAS	µg/L	0.01	0.46	2	<b>125</b>	0.01	0.01	0	0.01	0.02	67	1.13	1.07	5	1.13				
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																			
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	0.02	0.09	127	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	0	<0.02				
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	0.02	0.08	120	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	0	<0.02				
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	0.06	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	0.07	0.08	13	0.07				
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	0	<0.02				
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																			
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1				
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02				
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	0.06	0.15	<b>86</b>	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	0.03	0	0.03				
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	0.03	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02				
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02				
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02				
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02				
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02				
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02				
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05				
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																			
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05				
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	0.02	nc	<0.05	<0.05	nc	<0.05	0.02	nc	<0.05	<0.05	nc	<0.05				
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05				
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05				
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																			
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02				
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05				
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02				
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05				
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05				
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02				
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05				

**Notes**  
LOR = Limit of Reporting  
nc = non calculable as concentrations in one or both samples are below the LOR  
High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

Lab Report Number	338971		ES2341298		ES2341298		ES2341298		338971		ES2341298		ES2341298		ES2341298		338971	
	Field ID	0908_QC203_231123	0908_MW132S_231123	0908_QC105_231123	0908_MW132S_231123	0908_QC205_231123	0908_MW130D_231127	0908_QC109_231127	0908_MW130D_231127	0908_QC209_231127	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD
		Matrix Type																
Date	23 Nov 2023		23 Nov 2023	23 Nov 2023	23 Nov 2023	23 Nov 2023	27 Nov 2023	27 Nov 2023	27 Nov 2023	27 Nov 2023								
	Unit	LOR																
<b>PFAS</b>																		
Perfluorooctanoic acid (PFOA)	µg/L	0.01	0.02	0	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.76	3	0.18	0.18	0	0.18	0.16	12	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.24	4	0.05	0.04	22	0.05	0.06	18	<0.01	0.01	nc	<0.01	0.01	nc	<0.01	0.01
Sum of PFHxS and PFOS	µg/L	0.01	1	1	0.23	0.22	4	0.23	0.22	4	<0.01	0.01	nc	<0.01	0.01	nc	<0.01	0.01
Sum of PFAS	µg/L	0.01	1.1	3	0.23	0.22	4	0.23	0.22	4	<0.01	0.01	nc	<0.01	0.01	nc	<0.01	0.01
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																		
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	0.08	13	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																		
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.1	nc	<0.1	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	0.03	0	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.05
Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.1
Perfluorotetradecanoic acid (PFTTeDA)	µg/L	0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.5
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.01
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.01
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.02
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.02
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																		
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.5

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D1 - Water Duplicate RPDs

Lab Report Number	ES2341298		ES2341298		RPD	ES2341298		338971		RPD	ES2341299		ES2341299		RPD	ES2341299		338971		RPD	ES2341298	
	Field ID	0908_MW130S_231127	0908_QC107_231127			0908_MW130S_231127	0908_QC207_231127		0908_SW009_231128		0908_QC111_231128		0908_SW009_231128	0908_QC211_231128			0908_SW009_231128	0908_QC211_231128			0908_MW118_231128	
		Water		Water		Water		Water			Water		Water			Water		Water				
		Date	27 Nov 2023	27 Nov 2023			27 Nov 2023	27 Nov 2023			28 Nov 2023	28 Nov 2023		28 Nov 2023		28 Nov 2023		28 Nov 2023	28 Nov 2023			28 Nov 2023
Matrix Type	Water		Water		Water		Water		Water		Water		Water		Water							
Date	27 Nov 2023		27 Nov 2023		27 Nov 2023		27 Nov 2023		27 Nov 2023		28 Nov 2023		28 Nov 2023		28 Nov 2023		28 Nov 2023					
Unit	LOR																					
<b>PFAS</b>																						
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.05	0.05	0	0.05	0.05	0	<0.01							
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.96	0.96	0	0.96	0.9	6	<0.01							
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	0.58	0.62	7	0.58	0.68	16	<0.01							
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.54	1.58	3	1.54	1.6	4	<0.01							
Sum of PFAS	µg/L	0.01	<0.01	<0.01	nc	<0.01	<0.01	nc	1.83	1.87	2	1.83	1.9	4	<0.01							
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																						
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	0.03	0	0.03	0.03	0	<0.02							
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.03	0.03	0	0.03	0.05	50	<0.02							
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.06	0.06	0	0.06	0.08	29	<0.02							
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02							
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																						
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1	<0.1	nc	<0.1	<0.02	nc	<0.1							
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	0.02	0.02	0	0.02	0.03	40	<0.02							
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	0.1	0.1	0	0.1	0.1	0	<0.02							
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	0.02	nc	<0.02							
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02	<0.02	nc	<0.02	<0.01	nc	<0.02							
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02							
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02							
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.05	nc	<0.02							
Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02							
Perfluorotetradecanoic acid (PFTTeDA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05							
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																						
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05	<0.05	nc	<0.05	<0.01	nc	<0.05							
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05							
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05	<0.05	nc	<0.05	<0.02	nc	<0.05							
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																						
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02	<0.02	nc	<0.02	<0.1	nc	<0.02							
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05							
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02							
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05							
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05	<0.05	nc	<0.05	<0.1	nc	<0.05							
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02	<0.02	nc	<0.02							
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05	<0.05	nc	<0.05	<0.5	nc	<0.05							

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

	Lab Report Number		ES2341298		ES2341298		338971	
	Field ID		0908_QC114_231128		0908_MW118_231128		0908_QC214_231128	
	Matrix Type		Water		Water		Water	
	Date		28 Nov 2023		28 Nov 2023		28 Nov 2023	
	Unit	LOR	RPD	RPD	RPD	RPD	RPD	RPD
<b>PFAS</b>								
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	nc	<0.01	<0.01	<0.01	nc
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	nc	<0.01	<0.01	<0.01	nc
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	nc	<0.01	<0.01	<0.01	nc
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	nc	<0.01	<0.01	<0.01	nc
Sum of PFAS	µg/L	0.01	<0.01	nc	<0.01	<0.01	<0.01	nc
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	µg/L	0.02	<0.1	nc	<0.1	<0.02	<0.02	nc
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	nc	<0.02	<0.01	<0.01	nc
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	nc	<0.02	<0.05	<0.05	nc
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	nc	<0.02	<0.1	<0.1	nc
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	nc	<0.05	<0.5	<0.5	nc
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	nc	<0.05	<0.01	<0.01	nc
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	nc	<0.05	<0.01	<0.01	nc
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.02	<0.05	nc	<0.05	<0.02	<0.02	nc
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.02	<0.05	nc	<0.05	<0.02	<0.02	nc
<b>PFAS - Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	nc	<0.02	<0.1	<0.1	nc
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	nc	<0.05	<0.05	<0.05	nc
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	nc	<0.05	<0.05	<0.05	nc
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	nc	<0.05	<0.1	<0.1	nc
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	nc	<0.02	<0.02	<0.02	nc
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	nc	<0.05	<0.5	<0.5	nc

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D2 - Soil Duplicate RPDs

Lab Report Number Field ID Matrix Type Date	ES2341299		ES2341299		RPD	ES2341299		338971		RPD	ES2341299		ES2341299		RPD	ES2341299		338971		RPD	
	0908_SD079_231121		0908_QC104_231121			0908_SD079_231121		0908_QC204_231121			0908_SD048_231122		0908_QC110_231122			0908_SD048_231122		0908_QC210_231122			
	Soil		Soil			Soil		Soil			Soil		Soil			Soil		Soil			
	21 Nov 2023		21 Nov 2023			21 Nov 2023		21 Nov 2023			22 Nov 2023		22 Nov 2023			22 Nov 2023		22 Nov 2023			
	Unit	LOR																			
<b>PFAS</b>																					
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	0.0003	40	<0.0002	0.0003	40							
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	0.0005	0.0008	46	0.0005	0.0008	46	0.0021	0.0156	153	0.0021	0.0085	121							
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	0.0005	0.003	143	0.0005	0.0018	113							
Sum of PFHxS and PFOS	mg/kg	0.0001	0.0005	0.0008	46	0.0005	0.0008	46	0.0026	0.0186	151	0.0026	0.01	117							
Sum of PFAS	mg/kg	0.0001	0.0005	0.0008	46	0.0005	0.0008	46	0.0026	0.0189	152	0.0026	0.011	124							
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																					
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0							
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	0.0001	0							
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	0.0003	40							
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0							
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																					
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002	<0.001	<0.001	0	<0.001	<0.0002	0	<0.001	<0.001	0	<0.001	<0.0002	0							
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0							
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	0.0002	0							
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0							
Perfluorononanoic acid (PFNA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0	<0.0002	<0.0002	0	<0.0002	<0.0001	0							
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0	<0.0002	<0.0002	0	<0.0002	<0.0005	0							
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0	<0.0002	<0.0002	0	<0.0002	<0.0005	0							
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0	<0.0002	<0.0002	0	<0.0002	<0.0005	0							
Perfluorotridecanoic acid (PFTTrDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0	<0.0002	<0.0002	0	<0.0002	<0.0005	0							
Perfluorotetradecanoic acid (PFTTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0	<0.0005	<0.0005	0							
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	0	<0.0005	<0.0001	0	<0.0005	<0.0005	0	<0.0005	<0.0001	0							
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	0	<0.0005	<0.0001	0	<0.0005	<0.0005	0	<0.0005	<0.0001	0							
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	0	<0.0005	<0.0002	0	<0.0005	<0.0005	0	<0.0005	<0.0002	0							
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	0	<0.0005	<0.0002	0	<0.0005	<0.0005	0	<0.0005	<0.0002	0							
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																					
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.001	0	<0.0002	<0.0002	0	<0.0002	<0.001	0							
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0							
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0							
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0							
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.001	0	<0.0005	<0.0005	0	<0.0005	<0.001	0							
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0	<0.0002	<0.0002	0							
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0	<0.0005	<0.0005	0	<0.0005	<0.005	0							

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D2 - Soil Duplicate RPDs

Lab Report Number Field ID Matrix Type Date	ES2341299		ES2341299		RPD	ES2341299		338971		RPD
	0908_SD011_231128		0908_QC113_231128			0908_SD011_231128		0908_QC213_231128		
	Soil		Soil			Soil		Soil		
	28 Nov 2023		28 Nov 2023			28 Nov 2023		28 Nov 2023		
	Unit	LOR								
<b>PFAS</b>										
Perfluorooctanoic acid (PFOA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0		
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	0.02	0.0191	5	0.02	0.018	11		
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	0.0007	0.0007	0	0.0007	0.0008	13		
Sum of PFHxS and PFOS	mg/kg	0.0001	0.0207	0.0198	4	0.0207	0.019	9		
Sum of PFAS	mg/kg	0.0001	0.021	0.0211	0	0.021	0.019	10		
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>										
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.0001	<0.0002	0.001	133	<0.0002	<0.0001	0		
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0		
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	0.0001	0		
Perfluorodecane sulfonic acid (PFDS)	mg/kg	0.0002	0.0003	0.0003	0	0.0003	<0.0002	40		
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>										
Perfluorobutanoic acid (PFBA)	mg/kg	0.0002	<0.001	<0.001	0	<0.001	<0.0002	0		
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0		
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0		
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0001	0		
Perfluorononanoic acid (PFNA)	mg/kg	0.0001	<0.0002	<0.0002	0	<0.0002	<0.0005	0		
Perfluorodecanoic acid (PFDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0		
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0025	0		
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		
Perfluorotridecanoic acid (PFTTrDA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0005	0		
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>										
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	0	<0.0005	<0.0001	0		
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	mg/kg	0.0001	<0.0005	<0.0005	0	<0.0005	<0.0001	0		
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	0	<0.0005	<0.0002	0		
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.0002	<0.0005	<0.0005	0	<0.0005	<0.0002	0		
<b>PFAS - Perfluoroalkyl Sulfonamides</b>										
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.005	0		
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.002	0		
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.005	0		
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0002	<0.0002	<0.0002	0	<0.0002	<0.0002	0		
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.0005	<0.0005	<0.0005	0	<0.0005	<0.01	0		

**Notes**  
 LOR = Limit of Reporting  
 nc = non calculable as concentrations in one or both samples are below the LOR  
 High RPDs (>30%, or >50% for results 10-20 x LOR) are highlighted in bold

Table D3 - Rinsate Blank Results

Lab Report Number	Matrix Type															
	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	ES2341300	
Matrix Type	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	
Date	20 Nov 2023	20 Nov 2023	21 Nov 2023	21 Nov 2023	22 Nov 2023	22 Nov 2023	23 Nov 2023	23 Nov 2023	24 Nov 2023	24 Nov 2023	27 Nov 2023	27 Nov 2023	28 Nov 2023	28 Nov 2023	28 Nov 2023	
Unit	LOR															
<b>PFAS</b>																
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>PFAS - Perfluoroalkyl Sulfonic Acids</b>																
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>PFAS - Perfluoroalkyl Carboxylic Acids</b>																
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>PFAS - (n:2) Fluorotelomer Sulfonic Acids</b>																
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>PFAS - Perfluoroalkyl Sulfonamides</b>																
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Notes  
 LOR = Limit of Reporting

# Appendix E

## Laboratory Certificates





# CERTIFICATE OF ANALYSIS

**Work Order** : **ES2341289**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : **[REDACTED]**  
**Address** : **LEVEL 21 420 GEORGE STREET**  
**SYDNEY NSW, AUSTRALIA 2000**  
**Telephone** : **----**  
**Project** : **NSW\_0908\_PFASOMP\_23**  
**Order number** : **60612562\_2.1**  
**C-O-C number** : **60082**  
**Sampler** : **[REDACTED]**  
**Site** : **Offsite\_1**  
**Quote number** : **SY/139/19 v4 60612562\_2.1**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : 1 of 7  
**Laboratory** : Environmental Division Sydney  
**Contact** : **[REDACTED]**  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 29-Nov-2023 15:20  
**Date Analysis Commenced** : 30-Nov-2023  
**Issue Date** : 06-Dec-2023 12:19



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

∅ = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD600_231127	----	----	----	----
Sampling date / time		27-Nov-2023 10:18		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341289-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>63.0</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0016</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<b>0.0004</b>	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0510</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<b>0.0004</b>	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD600_231127	----	----	----	----
Sampling date / time				27-Nov-2023 10:18	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341289-001	-----	-----	-----	-----	-----
				Result	---	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0534</b>	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0526</b>	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0526</b>	----	----	----	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>96.6</b>	----	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>103</b>	----	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW600_231127	----	----	----	----
		Sampling date / time		27-Nov-2023 10:18	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341289-002	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.28	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.40	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW600_231127		----	----	----	----
		Sampling date / time	27-Nov-2023 10:18		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341289-002	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.83</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.68</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.80</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>97.7</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>102</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES2341289</b>	<b>Page</b>	<b>: 1 of 11</b>
<b>Client</b>	<b>: AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: [REDACTED]</b>	<b>Contact</b>	<b>: [REDACTED]</b>
<b>Address</b>	<b>: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: NSW_0908_PFASOMP_23</b>	<b>Date Samples Received</b>	<b>: 29-Nov-2023</b>
<b>Order number</b>	<b>: 60612562_2.1</b>	<b>Date Analysis Commenced</b>	<b>: 30-Nov-2023</b>
<b>C-O-C number</b>	<b>: 60082</b>	<b>Issue Date</b>	<b>: 06-Dec-2023</b>
<b>Sampler</b>	<b>: [REDACTED]</b>		
<b>Site</b>	<b>: Offsite_1</b>		
<b>Quote number</b>	<b>: SY/139/19 v4 60612562_2.1</b>		
<b>No. of samples received</b>	<b>: 2</b>		
<b>No. of samples analysed</b>	<b>: 2</b>		



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This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5467274)</b>									
ES2341289-001	0908_SD600_231127	EA055: Moisture Content	----	0.1	%	63.0	62.2	1.3	0% - 20%
ES2341299-006	Anonymous	EA055: Moisture Content	----	0.1	%	28.0	28.5	1.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	0908_SD600_231127	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0016	0.0020	20.6	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0510	0.0536	5.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0112	0.0099	12.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958)</b>									
ES2341289-001	0908_SD600_231127	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958) - continued</b>									
ES2341289-001	0908_SD600_231127	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958)</b>									
ES2341289-001	0908_SD600_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958) - continued</b>									
ES2341299-005	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	0908_SD600_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	50.2	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797) - continued</b>									
ES2341292-001	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460797) - continued</b>									
ES2341291-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	<0.01	120	No Limit
ES2341291-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.3	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.3	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	93.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.1	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.7	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.7	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.2	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.1	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.0	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.7	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.9	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	72.4	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.3	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.1	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.5	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.9	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.1	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.7	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.6	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145	





Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.7	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)		
					MS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
ES2341289-001	0908_SD600_231127	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.1	72.0	128	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.8	73.0	123	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	94.3	67.0	130	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	97.9	70.0	132	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.6	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
ES2341289-001	0908_SD600_231127	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.8	71.0	135	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	93.4	69.0	132	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	104	70.0	132	
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	95.4	71.0	131	
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133	
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	94.0	72.0	129	
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.4	69.0	133	
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	95.2	64.0	136	
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	93.4	69.0	135	
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.00125 mg/kg	93.4	66.0	139	
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133	
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>						





Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958) - continued</b>							
ES2341289-001	0908_SD600_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	97.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	87.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	80.2	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.3	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>							
ES2341289-001	0908_SD600_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	74.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	85.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	103	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.1	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	95.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	73.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.3	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.3	65.0	144



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797) - continued</b>							
ES2341292-002	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.7	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.7	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	88.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.1	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341289	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_1	Issue Date	: 06-Dec-2023
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2341289--001	0908_SD600_231127	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

**Analysis Holding Time Compliance**

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD600_231127	27-Nov-2023	----	----	----	04-Dec-2023	11-Dec-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD600_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD600_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD600_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW600_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW600_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW600_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW600_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW600_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341289**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 3
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: 60082	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite_1		
Sampler	: [REDACTED]		

### Dates

Date Samples Received	: 29-Nov-2023 15:20	Issue Date	: 29-Nov-2023
Client Requested Due Date	: 06-Dec-2023	Scheduled Reporting Date	: <b>06-Dec-2023</b>

### Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 5	Temperature	: 10.1'C, 9.0'C & 12.0'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2341289-001	27-Nov-2023 10:18	0908_SD600_231127	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341289-002	27-Nov-2023 10:18	0908_SW600_231127	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

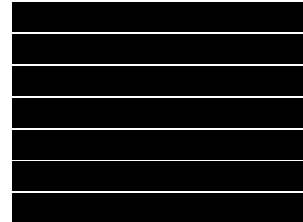
Email

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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

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**CHAIN OF CUSTODY**  
 ALS COC#: 60082 ALS Laboratory: ES Sydney  
 Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite\_1

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 29/11/23 15:20

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SD600_231127		27/11/2023 10:18 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
002	0908_SW600_231127		27/11/2023 10:18 AM	WATER	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341289**  
 Telephone : + 61-2-8794 8555



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_1

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 29/11/23

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SDE600_231127	HDPE Soil Jar	200 mL	00621122012090	Grey	No	
002	0908_SW600_231127	HDPE (no PTFE)	20 mL	00352309050159	Grey	No	
002	0908_SW600_231127	HDPE (no PTFE)	20 mL	00352309050257	Grey	No	
002	0908_SW600_231127	HDPE (no PTFE)	20 mL	00352309050213	Grey	No	
002	0908_SW600_231127	HDPE (no PTFE)	20 mL	00352309050321	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0



## CERTIFICATE OF ANALYSIS

Work Order : **ES2341290**  
Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : **LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000**  
Telephone : **----**  
Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**  
C-O-C number : **60083**  
Sampler : **[REDACTED]**  
Site : **Offsite\_2**  
Quote number : **SY/139/19 v4 60612562\_2.1**  
No. of samples received : **1**  
No. of samples analysed : **1**

Page : 1 of 5  
Laboratory : Environmental Division Sydney  
Contact : **[REDACTED]**  
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**  
Telephone : **+61 2 8784 8555**  
Date Samples Received : **29-Nov-2023 15:20**  
Date Analysis Commenced : **30-Nov-2023**  
Issue Date : **05-Dec-2023 09:33**



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)		Sample ID		0908_MW139_231127	----	----	----	----
Sampling date / time		27-Nov-2023 10:53		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341290-001	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW139\_231127

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Sampling date / time

27-Nov-2023 10:53

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Compound	CAS Number	LOR	Unit
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ES2341290-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	<b>98.6</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>107</b>	----	----	----	----





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES2341290</b>	<b>Page</b>	<b>: 1 of 7</b>
<b>Client</b>	<b>: AECOM AUSTRALIA PTY LTD</b>	<b>Laboratory</b>	<b>: Environmental Division Sydney</b>
<b>Contact</b>	<b>: [REDACTED]</b>	<b>Contact</b>	<b>: [REDACTED]</b>
<b>Address</b>	<b>: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000</b>	<b>Address</b>	<b>: 277-289 Woodpark Road Smithfield NSW Australia 2164</b>
<b>Telephone</b>	<b>: ----</b>	<b>Telephone</b>	<b>: +61 2 8784 8555</b>
<b>Project</b>	<b>: NSW_0908_PFASOMP_23</b>	<b>Date Samples Received</b>	<b>: 29-Nov-2023</b>
<b>Order number</b>	<b>: 60612562_2.1</b>	<b>Date Analysis Commenced</b>	<b>: 30-Nov-2023</b>
<b>C-O-C number</b>	<b>: 60083</b>	<b>Issue Date</b>	<b>: 05-Dec-2023</b>
<b>Sampler</b>	<b>: [REDACTED]</b>		
<b>Site</b>	<b>: Offsite_2</b>		
<b>Quote number</b>	<b>: SY/139/19 v4 60612562_2.1</b>		
<b>No. of samples received</b>	<b>: 1</b>		
<b>No. of samples analysed</b>	<b>: 1</b>		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	50.2	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797) - continued</b>									
ES2341292-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460797)</b>							
ES2341292-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	<0.01	120	No Limit
ES2341291-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	72.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.9	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.7	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	95.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	73.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.3	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.3	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797) - continued</b>							
ES2341292-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.7	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	88.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.1	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341290	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_2	Issue Date	: 05-Dec-2023
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW139_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW139_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW139_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW139_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW139_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2341290

Client : AECOM AUSTRALIA PTY LTD  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 60083  
Site : Offsite\_2  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 06-Dec-2023

Issue Date : 29-Nov-2023  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5  
Receipt Detail :

Security Seal : Not Available  
Temperature : 10.1'C, 9.0'C 12.0'C  
No. of samples received / analysed : 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341290-001	27-Nov-2023 10:53	0908_MW139_231127	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



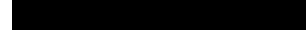
Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



**CHAIN OF CUSTODY**

ALS COC#: 60083 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 29/11/23

1520

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / Frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		
							PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW139_231127		27/11/2023 10:53 AM	WATER	ALS: 4 Non ALS: 0	No	X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341290**  
 Telephone : + 61-2-6794 8655



**CHAIN OF CUSTODY**

ALS COC#: 60083 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: *MLW*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: *29/11/23*

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMV139_231127	HDPE (no PTFE)	20 mL	00352309050115	Grey	No	
001	0908_MMV139_231127	HDPE (no PTFE)	20 mL	00352309050181	Grey	No	
001	0908_MMV139_231127	HDPE (no PTFE)	20 mL	00352309050076	Grey	No	
001	0908_MMV139_231127	HDPE (no PTFE)	20 mL	00352309050197	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0





# CERTIFICATE OF ANALYSIS

**Work Order** : **ES2341291**  
**Client** : **AECOM AUSTRALIA PTY LTD**  
**Contact** : **[REDACTED]**  
**Address** : **LEVEL 21 420 GEORGE STREET**  
**SYDNEY NSW, AUSTRALIA 2000**  
**Telephone** : **----**  
**Project** : **NSW\_0908\_PFASOMP\_23**  
**Order number** : **60612562\_2.1**  
**C-O-C number** : **60085**  
**Sampler** : **[REDACTED]**  
**Site** : **Offsite\_3**  
**Quote number** : **SY/139/19 v4 60612562\_2.1**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**Page** : 1 of 5  
**Laboratory** : Environmental Division Sydney  
**Contact** : **[REDACTED]**  
**Address** : 277-289 Woodpark Road Smithfield NSW Australia 2164  
**Telephone** : +61 2 8784 8555  
**Date Samples Received** : 29-Nov-2023 15:20  
**Date Analysis Commenced** : 30-Nov-2023  
**Issue Date** : 05-Dec-2023 09:34



Accreditation No. 825  
 Accredited for compliance with  
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_23112	0908_MW238S_23112			
				7	7			
				27-Nov-2023 13:02	27-Nov-2023 13:01			
Compound	CAS Number	LOR	Unit	ES2341291-001	ES2341291-002			
				Result	Result			
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW238D_23112 7	0908_MW238S_23112 7	----	----	----
Sampling date / time				27-Nov-2023 13:02	27-Nov-2023 13:01	----	----	----
Compound	CAS Number	LOR	Unit	ES2341291-001 Result	ES2341291-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>102</b>	<b>108</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>103</b>	<b>102</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: ES2341291	Page	: 1 of 7
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 30-Nov-2023
C-O-C number	: 60085	Issue Date	: 05-Dec-2023
Sampler	: [REDACTED] [REDACTED]		
Site	: Offsite_3		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 2		
No. of samples analysed	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	50.2	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341291-002	0908_MW238S_231127	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797) - continued</b>									
ES2341292-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341291-002	0908_MW238S_231127	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460797)</b>							
ES2341292-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	0908_MW238S_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	0908_MW238S_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460797)</b>									
ES2341292-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	<0.01	120	No Limit
ES2341291-002	0908_MW238S_231127	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	72.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.9	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.7	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	95.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	73.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.3	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.3	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797) - continued</b>							
ES2341292-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.7	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	88.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.1	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341291	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_3	Issue Date	: 05-Dec-2023
Sampler	: [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_231127,	0908_MW238S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_231127,	0908_MW238S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_231127,	0908_MW238S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_231127,	0908_MW238S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW238D_231127,	0908_MW238S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✔	05-Dec-2023	25-May-2024	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341291**

Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: 60085	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite_3		
Sampler	: [REDACTED]		

### Dates

Date Samples Received	: 29-Nov-2023 15:20	Issue Date	: 29-Nov-2023
Client Requested Due Date	: 06-Dec-2023	Scheduled Reporting Date	: <b>06-Dec-2023</b>

### Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 10.1°C, 9.0°C & 12.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341291-001	27-Nov-2023 13:02	0908_MW238D_231127	✓
ES2341291-002	27-Nov-2023 13:01	0908_MW238S_231127	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

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**CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney Environmental

COC#: 60085

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite\_3

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:CONTACT PH: [REDACTED]  
SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4EMAIL REPORTS TO:  
EMAIL INVOICES TO:RELINQUISHED BY:  
DATE TIME:RECEIVED BY: *MA*  
DATE TIME: 20/11/23 15:20RELINQUISHED BY:  
DATE TIME:RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MW238D_231127		27/1/2023 01:02 PM	WATER	ALS: 4 Non ALS: 0	No	X		
002	0908_MW238S_231127		27/1/2023 01:01 PM	WATER	ALS: 4 Non ALS: 0	No	X		

**ANALYSIS REQUIRED**Environmental Division  
Sydney  
Work Order Reference  
**ES2341291**

Telephone : + 61-2-6794 8555

**CHAIN OF CUSTODY**

ALS COC#: 60085 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: Offsite\_3

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *ML*  
DATE TIME: *20/11/23 15:20*

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMW238D_231127	HDPE (no PTFE)	20 mL	00352309050179	Grey	No	
001	0908_MMW238D_231127	HDPE (no PTFE)	20 mL	00350822059711	Grey	No	
001	0908_MMW238D_231127	HDPE (no PTFE)	20 mL	00350822059379	Grey	No	
001	0908_MMW238D_231127	HDPE (no PTFE)	20 mL	00352309050326	Grey	No	
002	0908_MMW238S_231127	HDPE (no PTFE)	20 mL	00352309050202	Grey	No	
002	0908_MMW238S_231127	HDPE (no PTFE)	20 mL	00352309050222	Grey	No	
002	0908_MMW238S_231127	HDPE (no PTFE)	20 mL	00352309050137	Grey	No	
002	0908_MMW238S_231127	HDPE (no PTFE)	20 mL	00352309050138	Grey	No	

Total Bottle Count ALS: 8, Non ALS: 0



# CERTIFICATE OF ANALYSIS

Work Order : **ES2341292**

Page : 1 of 5

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60086

Issue Date : 11-Dec-2023 14:55

Sampler : [REDACTED]

Site : Offsite\_4

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (11/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 002. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271D_23112 7	0908_MW271S_23112 7	----	----	----
Sampling date / time				27-Nov-2023 11:36	27-Nov-2023 11:52	----	----	----
Compound	CAS Number	LOR	Unit	ES2341292-001 Result	ES2341292-002 Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW271D_23112 7	0908_MW271S_23112 7	----	----	----
Sampling date / time				27-Nov-2023 11:36	27-Nov-2023 11:52	----	----	----
Compound	CAS Number	LOR	Unit	ES2341292-001 Result	ES2341292-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.04</b>	<b>0.04</b>	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.01</b>	<b>0.01</b>	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.04</b>	<b>0.04</b>	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>99.9</b>	<b>104</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>99.5</b>	<b>98.7</b>	----	----	----





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order : **ES2341292**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60086

Issue Date : 11-Dec-2023

Sampler : [REDACTED]

Site : Offsite\_4

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	0908_MW271D_231127	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	50.2	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797)</b>									
ES2341292-001	0908_MW271D_231127	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460797) - continued</b>									
ES2341292-001	0908_MW271D_231127	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460797)</b>							
ES2341292-001	0908_MW271D_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460797)</b>									
ES2341292-001	0908_MW271D_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341291-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460797)</b>									
ES2341292-001	0908_MW271D_231127	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	<0.01	120	No Limit
ES2341291-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	72.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	90.9	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	97.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	86.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	86.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	79.7	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	0908_MW271S_231127	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	95.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	80.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	73.4	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460797)</b>							
ES2341292-002	0908_MW271S_231127	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	92.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	83.9	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.3	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	79.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	95.2	71.0	132		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797)</b>							
ES2341292-002	0908_MW271S_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.7	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460797) - continued</b>							
ES2341292-002	0908_MW271S_231127	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.7	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460797)</b>							
ES2341292-002	0908_MW271S_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	82.9	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	91.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	88.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.1	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341292	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_4	Issue Date	: 11-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_231127,	0908_MW271S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_231127,	0908_MW271S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_231127,	0908_MW271S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_231127,	0908_MW271S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW271D_231127,	0908_MW271S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341292**  
Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

C-O-C number : 60086  
Site : Offsite\_4  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 06-Dec-2023  
Issue Date : 11-Dec-2023  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5  
Receipt Detail :  
Security Seal : Not Available  
Temperature : 10.1'C, 9.0'C & 12.0'C  
No. of samples received / analysed : 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months  $\pm$  1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341292-001	27-Nov-2023 11:36	0908_MW271D_231127	✓
ES2341292-002	27-Nov-2023 11:52	0908_MW271S_231127	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



**CHAIN OF CUSTODY**



COC#: 60086 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_4

ORDER NO:

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *ZKW*  
DATE TIME: *09/11/23 15:20*

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

**SAMPLE DETAILS**

SAMPLE #	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED		ADDITIONAL INFORMATION
							PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	
001	0908_MWZ71D_231127		27/11/2023 11:36 AM	WATER	ALS: 4 Non ALS: 0	No	X		
002	0908_MWZ71S_231127		27/11/2023 11:36 AM	WATER	ALS: 4 Non ALS: 0	No	X		

Environmental Division  
Sydney  
Work Order Reference  
**ES2341292**



Telephone : + 61-2-8784 8665

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASSOMP\_23

SITE: Offsite\_4

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: *SKW*  
 DATE TIME: *29/11/23*

RELINQUISHED BY:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Rarandom Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMW271D_231127	HDPE (no PTFE)	20 mL	00350822059670	Grey	No	
001	0908_MMW271D_231127	HDPE (no PTFE)	20 mL	00350822036129	Grey	No	
001	0908_MMW271D_231127	HDPE (no PTFE)	20 mL	00352309050082	Grey	No	
001	0908_MMW271D_231127	HDPE (no PTFE)	20 mL	00352309050145	Grey	No	
002	0908_MMW271S_231127	HDPE (no PTFE)	20 mL	00352309050087	Grey	No	
002	0908_MMW271S_231127	HDPE (no PTFE)	20 mL	00352309050133	Grey	No	
002	0908_MMW271S_231127	HDPE (no PTFE)	20 mL	00352309050154	Grey	No	
002	0908_MMW271S_231127	HDPE (no PTFE)	20 mL	00352309050200	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0





## CERTIFICATE OF ANALYSIS

Work Order : **ES2341293**  
Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : **LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000**  
Telephone : **----**  
Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**  
C-O-C number : **60087**  
Sampler : **[REDACTED]**  
Site : **Offsite\_5**  
Quote number : **SY/139/19 v4 60612562\_2.1**  
No. of samples received : **1**  
No. of samples analysed : **1**

Page : 1 of 5  
Laboratory : Environmental Division Sydney  
Contact : **[REDACTED]**  
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**  
Telephone : **+61 2 8784 8555**  
Date Samples Received : **29-Nov-2023 15:20**  
Date Analysis Commenced : **30-Nov-2023**  
Issue Date : **04-Dec-2023 12:37**



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_23112

7

Sampling date / time

27-Nov-2023 14:27

Compound	CAS Number	LOR	Unit	Result				
				ES2341293-001	-----	-----	-----	-----
				Result	----	----	----	----

### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

0908\_MW230S\_23112  
7

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Sampling date / time

27-Nov-2023 14:27

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Compound

CAS Number

LOR

Unit

ES2341293-001

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	0.03	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.03	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.03	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	96.3	----	----	----	----
13C8-PFOA	----	0.02	%	98.6	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: <b>ES2341293</b>	Page	: 1 of 6
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 30-Nov-2023
C-O-C number	: 60087	Issue Date	: 04-Dec-2023
Sampler	: [REDACTED] [REDACTED]		
Site	: Offsite_5		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 1		
No. of samples analysed	: 1		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	0908_MW230S_231127	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	63.4	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890)</b>									
ES2341293-001	0908_MW230S_231127	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890)</b>							
ES2341293-001	0908_MW230S_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890) - continued</b>									
ES2341293-001	0908_MW230S_231127	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	0908_MW230S_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460890)</b>									
ES2341293-001	0908_MW230S_231127	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.01	100	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	77.3	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	73.6	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	77.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.0	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	79.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	99.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	92.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	74.8	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	79.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890) - continued</b>							
ES2341294-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	99.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341293	Page	: 1 of 4
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_5	Issue Date	: 04-Dec-2023
Sampler	: [REDACTED]	No. of samples received	: 1
Order number	: 60612562_2.1	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_MW230S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341293**

Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: [REDACTED]	E-mail	: [REDACTED]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: NSW_0908_PFASOMP_23	Page	: 1 of 2
Order number	: 60612562_2.1	Quote number	: ES2021AECOMAU0024 (SY/139/19 v4 60612562_2.1)
C-O-C number	: 60087	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Offsite_5		
Sampler	: [REDACTED]		

### Dates

Date Samples Received	: 29-Nov-2023 15:20	Issue Date	: 29-Nov-2023
Client Requested Due Date	: 06-Dec-2023	Scheduled Reporting Date	: <b>06-Dec-2023</b>

### Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 5	Temperature	: 10.1°C, 9.0°C & 12.0°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341293-001	27-Nov-2023 14:27	0908_MW230S_231127	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



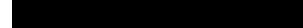
Email



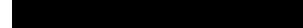
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- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



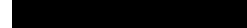
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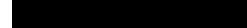
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CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite\_5

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *SKW*  
 DATE TIME: 29/11/23

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free ice / Frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMW230S_Z311Z7		27/11/2023 02:27 PM	WATER	ALS: 4 Non ALS: 0	No	X		

**ANALYSIS REQUIRED**

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341293**



Telephone : + 61-2-9794 8655

**CHAIN OF CUSTODY**



COC#: 60087

ALS Laboratory: ES Sydney  
Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_5

ORDER NO:

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 29/11/23 15:00

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

**LABORATORY USE ONLY (Circle)**  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW230S_231127	HDPE (no PTFE)	20 mL	00352309049597	Grey	No	
001	0908_MW230S_231127	HDPE (no PTFE)	20 mL	00352309049682	Grey	No	
001	0908_MW230S_231127	HDPE (no PTFE)	20 mL	00352309042845	Grey	No	
001	0908_MW230S_231127	HDPE (no PTFE)	20 mL	00352309042775	Grey	No	

Total Bottle Count: ALS: 4, Non ALS: 0



## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2341294</b>	Page	: 1 of 5
Amendment	: <b>1</b>		
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023 15:20
Order number	: 60612562_2.1	Date Analysis Commenced	: 30-Nov-2023
C-O-C number	: 60088	Issue Date	: 11-Dec-2023 15:16
Sampler	: [REDACTED]		
Site	: Offsite_6		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 2		
No. of samples analysed	: 2		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (11/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 002. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236D_23112 7	0908_MW236S_23112 7	----	----	----
Sampling date / time				27-Nov-2023 13:43	27-Nov-2023 13:57	----	----	----
Compound	CAS Number	LOR	Unit	ES2341294-001 Result	ES2341294-002 Result	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW236D_23112 7	0908_MW236S_23112 7	----	----	----
Sampling date / time				27-Nov-2023 13:43	27-Nov-2023 13:57	----	----	----
Compound	CAS Number	LOR	Unit	ES2341294-001 Result	ES2341294-002 Result	-----	-----	-----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>94.5</b>	<b>102</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>99.4</b>	<b>108</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120





## QUALITY CONTROL REPORT

Work Order : **ES2341294**

Page : 1 of 6

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60088

Issue Date : 11-Dec-2023

Sampler : [REDACTED]

Site : Offsite\_6

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

[REDACTED]

LCMS Coordinator

Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460890)</b>											
ES2341293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	63.4	No Limit		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890)</b>											
ES2341293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890)</b>									
		ES2341293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit		



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890) - continued</b>									
ES2341293-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.01	100	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	77.3	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	73.6	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	77.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.0	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>								



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.0	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	0908_MW236D_231127	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	79.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>							
ES2341294-001	0908_MW236D_231127	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	99.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	92.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	74.8	71.0	132		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>							
ES2341294-001	0908_MW236D_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	79.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890) - continued</b>							
ES2341294-001	0908_MW236D_231127	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	0908_MW236D_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	99.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341294	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_6	Issue Date	: 11-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_231127,	0908_MW236S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_231127,	0908_MW236S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_231127,	0908_MW236S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_231127,	0908_MW236S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW236D_231127,	0908_MW236S_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓





## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341294**

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

Page : 1 of 2  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)

C-O-C number : 60088  
Site : Offsite\_6  
Sampler : [REDACTED]

QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 06-Dec-2023

Issue Date : 11-Dec-2023  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5

Security Seal : Intact.  
Temperature : 10.1°C, 9.0°C & 12.0°C - Ice  
present

Receipt Detail : No. of samples received / analysed : 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341294-001	27-Nov-2023 13:43	0908_MW236D_231127	✓
ES2341294-002	27-Nov-2023 13:57	0908_MW236S_231127	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



**CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: Offsite\_6

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY: [Signature]  
DATE TIME: 20/11/23

RELINQUISHED BY:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)

Biohazard info:

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C  
Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_MMW236D_231127		27/11/2023 01:43 PM	WATER	ALS: 4 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
002	0908_MMW236S_231127		14/11/2023 02:07 PM	WATER	ALS: 4 Non ALS: 0	No	X	

Environmental Division  
Sydney  
Work Order Reference  
**ES2341294**  
Telephone : + 61-2-8784 8655



**CHAIN OF CUSTODY**

ALS COC#: 60088 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: Offsite\_6

ORDER NO:

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: 22/11/23 15:20	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days	LABORATORY USE ONLY (Circle)		
Biohazard Info:	Custody Seal Intact? Yes No N/A		
	Free Ice / Frozen ice bricks present upon receipt? Yes No N/A		
	Random Sample Temperature on Receipt: C		
	Other comments:		

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MW236D_231127	HDPE (no PTFE)	20 mL	00352309042833	Grey	No	
001	0908_MW236D_231127	HDPE (no PTFE)	20 mL	00352309050223	Grey	No	
001	0908_MW236D_231127	HDPE (no PTFE)	20 mL	00352309050351	Grey	No	
001	0908_MW236D_231127	HDPE (no PTFE)	20 mL	00352309049717	Grey	No	
002	0908_MW236S_231127	HDPE (no PTFE)	20 mL	00352309049389	Grey	No	
002	0908_MW236S_231127	HDPE (no PTFE)	20 mL	00352309049716	Grey	No	
002	0908_MW236S_231127	HDPE (no PTFE)	20 mL	00352309049771	Grey	No	
002	0908_MW236S_231127	HDPE (no PTFE)	20 mL	00352309042820	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0



## CERTIFICATE OF ANALYSIS

Work Order : **ES2341295**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60089

Issue Date : 11-Dec-2023 16:36

Sampler : [REDACTED]

Site : Offsite\_7

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 5

No. of samples analysed : 5



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (11/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 002. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD254_231127	0908_SD255_231127	0908_SD259_231127	0908_SD326_231127	----
Sampling date / time					27-Nov-2023 15:31	27-Nov-2023 15:35	27-Nov-2023 15:08	27-Nov-2023 15:29	----
Compound	CAS Number	LOR	Unit	ES2341295-001	ES2341295-002	ES2341295-003	ES2341295-004	-----	-----
				Result	Result	Result	Result	-----	-----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>32.2</b>	<b>40.5</b>	<b>59.2</b>	<b>33.9</b>	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0008</b>	<b>0.0007</b>	<b>0.0070</b>	<b>0.0004</b>	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<b>0.0004</b>	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0150</b>	<b>0.0115</b>	<b>0.0089</b>	<b>0.0114</b>	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<b>0.0002</b>	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD254_231127	0908_SD255_231127	0908_SD259_231127	0908_SD326_231127	----
Sampling date / time					27-Nov-2023 15:31	27-Nov-2023 15:35	27-Nov-2023 15:08	27-Nov-2023 15:29	----
Compound	CAS Number	LOR	Unit	ES2341295-001	ES2341295-002	ES2341295-003	ES2341295-004	-----	
				Result	Result	Result	Result	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0158</b>	<b>0.0122</b>	<b>0.0165</b>	<b>0.0118</b>	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0158</b>	<b>0.0122</b>	<b>0.0159</b>	<b>0.0118</b>	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0158</b>	<b>0.0122</b>	<b>0.0161</b>	<b>0.0118</b>	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>92.8</b>	<b>92.2</b>	<b>94.9</b>	<b>88.8</b>	----	
13C8-PFOA	----	0.0002	%	<b>107</b>	<b>102</b>	<b>107</b>	<b>112</b>	----	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW259_231127	----	----	----	----
		Sampling date / time		27-Nov-2023 15:09	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341295-005	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.03</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.04</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW259_231127		----	----	----	----
		Sampling date / time	27-Nov-2023 15:09		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341295-005	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.07</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.07</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.07</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>97.5</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>96.1</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2341295**

Page : 1 of 10

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60089

Issue Date : 11-Dec-2023

Sampler : [REDACTED]

Site : Offsite\_7

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 5

No. of samples analysed : 5



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5467274)</b>									
ES2341289-001	Anonymous	EA055: Moisture Content	----	0.1	%	63.0	62.2	1.3	0% - 20%
ES2341299-006	Anonymous	EA055: Moisture Content	----	0.1	%	28.0	28.5	1.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0016	0.0020	20.6	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0510	0.0536	5.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0112	0.0099	12.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958) - continued</b>									
ES2341289-001	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958) - continued</b>									
ES2341299-005	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	63.4	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890) - continued</b>									
ES2341293-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.01	100	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.3	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.3	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	93.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.1	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.7	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.7	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.2	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.1	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.0	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.7	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.4	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	77.3	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.9	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.1	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	73.6	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	77.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.6	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.0	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report						
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)				
							Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>										
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.1	72.0	128			
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.8	73.0	123			
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	94.3	67.0	130			
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	97.9	70.0	132			
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136			
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.6	59.0	134			
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>										
ES2341289-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.8	71.0	135			
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	93.4	69.0	132			
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	104	70.0	132			
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	95.4	71.0	131			
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133			
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	94.0	72.0	129			
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.4	69.0	133			
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	95.2	64.0	136			
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	93.4	69.0	135			
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	93.4	66.0	139			
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133			
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958) - continued</b>							
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	97.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	87.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	80.2	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.3	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>							
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	74.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	85.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	103	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.1	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	79.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	99.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	92.8	65.0	144



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890) - continued</b>							
ES2341294-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	74.8	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	79.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	99.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341295	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_7	Issue Date	: 11-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 5
Order number	: 60612562_2.1	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.





**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2341289--001	Anonymous	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

**Analysis Holding Time Compliance**

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
HDPE Soil Jar (EA055) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	----	----	----	04-Dec-2023	11-Dec-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD254_231127, 0908_SD259_231127,	0908_SD255_231127, 0908_SD326_231127	27-Nov-2023	04-Dec-2023	25-May-2024	✓	06-Dec-2023	13-Jan-2024	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW259_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	04-Dec-2023	25-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER** Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341295**  
Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

C-O-C number : 60089  
Site : Offsite\_7  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 06-Dec-2023  
Issue Date : 11-Dec-2023  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5  
Security Seal : Intact.  
Temperature : 10.1°C, 9.0°C & 12.0 - Ice present  
Receipt Detail :  
No. of samples received / analysed : 5 / 5

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2341295-001	27-Nov-2023 15:31	0908_SD254_231127	✓	✓
ES2341295-002	27-Nov-2023 15:35	0908_SD255_231127	✓	✓
ES2341295-003	27-Nov-2023 15:08	0908_SD259_231127	✓	✓
ES2341295-004	27-Nov-2023 15:29	0908_SD326_231127	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341295-005	27-Nov-2023 15:09	0908_SW259_231127	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email

Email

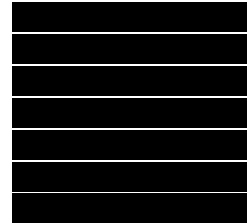
Email

Email

Email

Email

Email



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: Offsite\_7

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: *JKW*  
 DATE TIME: 29/11/23 15:20

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SD254_231127		27/11/2023 03:16 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
002	0908_SD255_231127		27/11/2023 03:16 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
003	0908_SD259_231127		27/11/2023 03:08 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
004	0908_SD326_231127		27/11/2023 03:16 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
005	0908_SW259_231127		27/11/2023 03:09 PM	WATER	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341295**  
  
 Telephone : + 61-2-8794 8555



**CHAIN OF CUSTODY**  
 ALS COC#: 60089

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_7

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:

RECEIVED BY: *AKV*  
 DATE TIME: 29/11/23

RELINQUISHED BY:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

1520

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SD254_231127	HDPE Soil Jar	200 mL	00621122012012	Grey	No	
002	0908_SD255_231127	HDPE Soil Jar	200 mL	00621122012009	Grey	No	
003	0908_SD259_231127	HDPE Soil Jar	200 mL	00621122012109	Grey	No	
004	0908_SD326_231127	HDPE Soil Jar	200 mL	00621122011989	Grey	No	
005	0908_SW259_231127	HDPE (no PTFE)	20 mL	00352309042829	Grey	No	
005	0908_SW259_231127	HDPE (no PTFE)	20 mL	00352309042748	Grey	No	
005	0908_SW259_231127	HDPE (no PTFE)	20 mL	00352309049664	Grey	No	
005	0908_SW259_231127	HDPE (no PTFE)	20 mL	00352309049699	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0



# CERTIFICATE OF ANALYSIS

Work Order : **ES2341296**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60090

Issue Date : 12-Dec-2023 15:15

Sampler : [REDACTED]

Site : Offsite\_8

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 3

No. of samples analysed : 3



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 001, 002, 003. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: FRESH WATER  
 (Matrix: WATER)

Sample ID

0908\_MW231S\_23112  
8

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----

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Sampling date / time

28-Nov-2023 08:25

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----

Compound	CAS Number	LOR	Unit	Result	----	----	----	----
				ES2341296-002	-----	-----	-----	-----
				Result	----	----	----	----

### EP231A: Perfluoroalkyl Sulfonic Acids

Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----

### EP231B: Perfluoroalkyl Carboxylic Acids

Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

### EP231C: Perfluoroalkyl Sulfonamides

Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: FRESH WATER  
 (Matrix: WATER)

Sample ID

0908\_MW231S\_23112  
8

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Sampling date / time

28-Nov-2023 08:25

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Compound

CAS Number

LOR

Unit

ES2341296-002

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Result

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### EP231C: Perfluoroalkyl Sulfonamides - Continued

N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----

### EP231D: (n:2) Fluorotelomer Sulfonic Acids

4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----

### EP231P: PFAS Sums

Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

### EP231S: PFAS Surrogate

13C4-PFOS	----	0.02	%	102	----	----	----	----
13C8-PFOA	----	0.02	%	103	----	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_23112 8	0908_POT382_23112 8	----	----	----
Sampling date / time				28-Nov-2023 08:35	28-Nov-2023 08:15	----	----	----
Compound	CAS Number	LOR	Unit	ES2341296-001 Result	ES2341296-003 Result	-----	-----	-----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW231D_23112 8	0908_POT382_23112 8	----	----	----
Sampling date / time				28-Nov-2023 08:35	28-Nov-2023 08:15	----	----	----
Compound	CAS Number	LOR	Unit	ES2341296-001	ES2341296-003	-----	-----	-----
				Result	Result	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>103</b>	<b>92.6</b>	----	----	----
13C8-PFOA	----	0.02	%	<b>102</b>	<b>99.8</b>	----	----	----



### Surrogate Control Limits

Sub-Matrix: FRESH WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120





# QUALITY CONTROL REPORT

Work Order : **ES2341296**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60090

Issue Date : 12-Dec-2023

Sampler : [REDACTED]

Site : Offsite\_8

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 3

No. of samples analysed : 3



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460812)</b>									
ES2341296-001	0908_MW231D_231128	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460812)</b>									
ES2341296-001	0908_MW231D_231128	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460812) - continued</b>									
ES2341296-001	0908_MW231D_231128	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460812)</b>							
ES2341296-001	0908_MW231D_231128	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460812)</b>									
ES2341296-001	0908_MW231D_231128	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460812)</b>									
ES2341296-001	0908_MW231D_231128	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	92.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	94.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	96.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	118	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.3	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	0908_MW231S_231128	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	82.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	71.3	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)</b>							
ES2341296-002	0908_MW231S_231128	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	89.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.5	71.0	132		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>							
ES2341296-002	0908_MW231S_231128	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	102	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	94.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.5	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812) - continued</b>							
ES2341296-002	0908_MW231S_231128	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	89.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.0	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	0908_MW231S_231128	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.4	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341296	Page	: 1 of 4
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_8	Issue Date	: 12-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 3
Order number	: 60612562_2.1	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.





## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_231128, 0908_POT382_231128	0908_MW231S_231128,	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_231128, 0908_POT382_231128	0908_MW231S_231128,	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_231128, 0908_POT382_231128	0908_MW231S_231128,	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_231128, 0908_POT382_231128	0908_MW231S_231128,	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW231D_231128, 0908_POT382_231128	0908_MW231S_231128,	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341296-001	28-Nov-2023 08:35	0908_MW231D_231128	✓
ES2341296-002	28-Nov-2023 08:25	0908_MW231S_231128	✓
ES2341296-003	28-Nov-2023 08:15	0908_POT382_231128	✓

## Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email



Email



Email



Email



Email



Email



Email





**CHAIN OF CUSTODY**

ALS COC#: 60090 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_8

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 29/11/23 15:20

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMW231D_231128		28/11/2023 09:03 AM	WATER	ALS: 4 Non ALS: 0	No	X	PFA5 Waters - New Analysis WATER
002	0908_MMW231S_231128		28/11/2023 08:36 AM	WATER	ALS: 4 Non ALS: 0	No	X	
003	0908_POT382_231128		28/11/2023 09:02 AM	WATER	ALS: 4 Non ALS: 0	No	X	

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341296**  
  
 Telephone : + 61-2-8794 8555

**CHAIN OF CUSTODY**

ALS COC#: 60090 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_8

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:



CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ESS2021AECOMAU002 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *ZLV*  
DATE TIME: 29/11/23 18:20

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MM231D_231128	HDPE (no PTFE)	20 mL	00352309049614	Grey	No	
001	0908_MM231D_231128	HDPE (no PTFE)	20 mL	00352309049738	Grey	No	
001	0908_MM231D_231128	HDPE (no PTFE)	20 mL	00352309042752	Grey	No	
001	0908_MM231D_231128	HDPE (no PTFE)	20 mL	00352101040340	Grey	No	
002	0908_MM231S_231128	HDPE (no PTFE)	20 mL	00352309049622	Grey	No	
002	0908_MM231S_231128	HDPE (no PTFE)	20 mL	00352309049754	Grey	No	
002	0908_MM231S_231128	HDPE (no PTFE)	20 mL	00352309049654	Grey	No	
002	0908_MM231S_231128	HDPE (no PTFE)	20 mL	00352309049593	Grey	No	
003	0908_POT382_231128	HDPE (no PTFE)	20 mL	00351221022489	Grey	No	
003	0908_POT382_231128	HDPE (no PTFE)	20 mL	00351221022217	Grey	No	
003	0908_POT382_231128	HDPE (no PTFE)	20 mL	00351221022394	Grey	No	
003	0908_POT382_231128	HDPE (no PTFE)	20 mL	00351221022316	Grey	No	

Total Bottle Count: ALS: 12, Non ALS: 0



# CERTIFICATE OF ANALYSIS

Work Order : **ES2341297**

Page : 1 of 7

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60091

Issue Date : 12-Dec-2023 15:20

Sampler : [REDACTED]

Site : Offsite\_9

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 001, 002. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)		Sample ID		0908_SD019_231128	----	----	----	----
Sampling date / time		28-Nov-2023 10:23		----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341297-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>								
Moisture Content	----	0.1	%	<b>69.8</b>	----	----	----	----
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0008</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0123</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD019_231128	----	----	----	----
Sampling date / time				28-Nov-2023 10:23	----	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341297-001	-----	-----	-----	-----	-----
				Result	---	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0131</b>	----	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0131</b>	----	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0131</b>	----	----	----	----	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>91.4</b>	----	----	----	----	----
13C8-PFOA	----	0.0002	%	<b>108</b>	----	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_SW019_231128	----	----	----	----
		Sampling date / time		28-Nov-2023 10:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341297-002	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.06</b>	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.02</b>	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_SW019_231128		----	----	----	----
		Sampling date / time	28-Nov-2023 10:15		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341297-002	-----	-----	-----	-----
				Result	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.08</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.08</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.08</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>94.4</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>96.5</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2341297**

Page : 1 of 10

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60091

Issue Date : 12-Dec-2023

Sampler : [REDACTED]

Site : Offsite\_9

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 2

No. of samples analysed : 2



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5467274)</b>									
ES2341289-001	Anonymous	EA055: Moisture Content	----	0.1	%	63.0	62.2	1.3	0% - 20%
ES2341299-006	Anonymous	EA055: Moisture Content	----	0.1	%	28.0	28.5	1.6	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0016	0.0020	20.6	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0510	0.0536	5.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0112	0.0099	12.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958) - continued</b>									
ES2341289-001	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit		
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958) - continued</b>									
ES2341299-005	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>Sub-Matrix: WATER</b>									
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	63.4	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460890) - continued</b>									
ES2341293-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460890)</b>									
ES2341293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.03	0.01	100	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.3	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.3	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	93.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.1	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.7	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.7	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.2	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.1	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>								



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.4	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.0	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.7	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.2	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.1	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.4	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.6	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	77.3	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.8	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	90.9	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.9	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.1	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	73.6	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	77.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	81.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.6	57.6	145	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890) - continued</b>								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.6	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	82.0	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report						
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)				
							Low	High		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>										
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.1	72.0	128			
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.8	73.0	123			
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	94.3	67.0	130			
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	97.9	70.0	132			
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136			
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.6	59.0	134			
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>										
ES2341289-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.8	71.0	135			
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	93.4	69.0	132			
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	104	70.0	132			
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	95.4	71.0	131			
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133			
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	94.0	72.0	129			
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.4	69.0	133			
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	95.2	64.0	136			
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	93.4	69.0	135			
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.00125 mg/kg	93.4	66.0	139			
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133			
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								



Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958) - continued</b>							
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	97.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	87.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	80.2	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.3	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>							
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	74.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	85.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	103	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.1	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	79.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	95.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	99.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	99.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	92.8	65.0	144





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID		Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery(%) MS	Acceptable Limits (%) Low High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460890) - continued</b>							
ES2341294-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	74.8	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	79.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	86.1	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	93.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	86.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	79.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460890)</b>							
ES2341294-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	99.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144





## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341297	Page	: 1 of 5
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: Offsite_9	Issue Date	: 12-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 2
Order number	: 60612562_2.1	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



**Outliers : Quality Control Samples**

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2341289--001	Anonymous	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

**Analysis Holding Time Compliance**

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>							
HDPE Soil Jar (EA055) 0908_SD019_231128	28-Nov-2023	----	----	----	04-Dec-2023	12-Dec-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_231128	28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_231128	28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE Soil Jar (EP231X) 0908_SD019_231128	28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE Soil Jar (EP231X) 0908_SD019_231128	28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>EP231P: PFAS Sums</b>							
HDPE Soil Jar (EP231X) 0908_SD019_231128	28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✔	04-Dec-2023	26-May-2024	✔
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✔	04-Dec-2023	26-May-2024	✔
<b>EP231C: Perfluoroalkyl Sulfonamides</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✔	04-Dec-2023	26-May-2024	✔
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✔	04-Dec-2023	26-May-2024	✔
<b>EP231P: PFAS Sums</b>							
HDPE (no PTFE) (EP231X) 0908_SW019_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✔	04-Dec-2023	26-May-2024	✔



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341297**  
Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

C-O-C number : 60091  
Site : Offsite\_9  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 3  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 06-Dec-2023  
Issue Date : 12-Dec-2023  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5  
Security Seal : Not Available  
Temperature : 10.1°C, 9.0°C & 12.0°C - Ice present  
Receipt Detail :  
No. of samples received / analysed : 2 / 2

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2341297-001	28-Nov-2023 10:23	0908_SD019_231128	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341297-002	28-Nov-2023 10:15	0908_SW019_231128	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email





**CHAIN OF CUSTODY**  
 ALS COC#: 60091 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd  
 PROJECT: NSW\_0908\_PFASSOMP\_23  
 SITE: Offsite\_9

RELINQUISHED BY: [Blank]  
 RECEIVED BY: *Zaw*  
 DATE TIME: *21/11/23*

RELINQUISHED BY: [Blank]  
 DATE TIME: [Blank]

RECEIVED BY: [Blank]  
 DATE TIME: [Blank]

ORDER NO: [Blank]  
 PROJECT MANAGER: [Redacted]  
 PRIMARY SAMPLER: [Redacted]

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info: [Blank]

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments: [Blank]

EMAIL REPORTS TO: [Blank]  
 EMAIL INVOICES TO: [Blank]  
 CONTACT PH: [Blank]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLER MOBILE: [Blank]

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_SD019_231128		28/11/2023 09:16 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
002	0908_SWD19_231128		28/11/2023 09:16 AM	WATER	ALS: 4 Non ALS: 0	No		X		

Environmental Division  
 Sydney  
 Work Order Reference  
**ES2341297**  
 Telephone : + 61-2-9784 9855



**CHAIN OF CUSTODY**

ALS COC#: 60091 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: Offsite\_9

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:

RECEIVED BY: *SW*

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME: 29/11/23

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)

Biohazard info:

Custody Seal intact?

Freeze ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SDW19_231128	HDPE Soil Jar	200 mL	00621122012108	Grey	No	
002	0908_SDW19_231128	HDPE (no PTFE)	20 mL	00352309049711	Grey	No	
002	0908_SDW19_231128	HDPE (no PTFE)	20 mL	00352309049664	Grey	No	
002	0908_SDW19_231128	HDPE (no PTFE)	20 mL	00352309049625	Grey	No	
002	0908_SDW19_231128	HDPE (no PTFE)	20 mL	00352309042843	Grey	No	

Total Bottle Count: ALS: 5, Non ALS: 0



# CERTIFICATE OF ANALYSIS

Work Order : **ES2341298**

Page : 1 of 39

Amendment : **3**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60092

Issue Date : 13-Dec-2023 12:13

Sampler : [REDACTED]

Site : 0908\_Biannual

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 90

No. of samples analysed : 90



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (12/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 001, 002, 003. All analysis results are as per the previous report.
- Amendment (13/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 13/12/23, for samples 008, 088. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_23112 3	0908_MW106S_23112 3	0908_MW107D_23112 3	0908_MW107S_23112 3	0908_MW108D_23112 2
Sampling date / time				23-Nov-2023 08:18	23-Nov-2023 08:17	23-Nov-2023 10:38	23-Nov-2023 10:37	22-Nov-2023 14:07
Compound	CAS Number	LOR	Unit	ES2341298-001 Result	ES2341298-002 Result	ES2341298-003 Result	ES2341298-004 Result	ES2341298-005 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	<0.02	<0.02	<0.02	0.04
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	<0.02	<0.02	<0.02	0.06
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.62	0.11	<0.01	<0.01	0.44
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.39	0.08	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.09	<0.02	<0.02	<0.02	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW106D_23112 3	0908_MW106S_23112 3	0908_MW107D_23112 3	0908_MW107S_23112 3	0908_MW108D_23112 2
Sampling date / time				23-Nov-2023 08:18	23-Nov-2023 08:17	23-Nov-2023 10:38	23-Nov-2023 10:37	22-Nov-2023 14:07
Compound	CAS Number	LOR	Unit	ES2341298-001	ES2341298-002	ES2341298-003	ES2341298-004	ES2341298-005
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.23</b>	<b>0.20</b>	<0.01	<0.01	<b>0.59</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.01</b>	<b>0.19</b>	<0.01	<0.01	<b>0.44</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.17</b>	<b>0.20</b>	<0.01	<0.01	<b>0.53</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.2</b>	<b>106</b>	<b>95.8</b>	<b>97.8</b>	<b>102</b>
13C8-PFOA	----	0.02	%	<b>103</b>	<b>102</b>	<b>110</b>	<b>110</b>	<b>104</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_23112 2	0908_MW109D_23112 2	0908_MW118_231128	0908_MW121_231120	0908_MW122_231121
Sampling date / time				22-Nov-2023 14:05	22-Nov-2023 14:47	28-Nov-2023 10:24	20-Nov-2023 14:57	21-Nov-2023 10:55
Compound	CAS Number	LOR	Unit	ES2341298-006	ES2341298-007	ES2341298-008	ES2341298-009	ES2341298-010
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.76	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.05	1.05	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	1.46	12.9	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.78	0.45	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.68	9.64	<0.01	0.02	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.26	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.16	1.19	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.32	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.23	0.88	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW108S_23112 2	0908_MW109D_23112 2	0908_MW118_231128	0908_MW121_231120	0908_MW122_231121
Sampling date / time				22-Nov-2023 14:05	22-Nov-2023 14:47	28-Nov-2023 10:24	20-Nov-2023 14:57	21-Nov-2023 10:55
Compound	CAS Number	LOR	Unit	ES2341298-006 Result	ES2341298-007 Result	ES2341298-008 Result	ES2341298-009 Result	ES2341298-010 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>7.39</b>	<b>27.6</b>	<0.01	<b>0.02</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>6.14</b>	<b>22.5</b>	<0.01	<b>0.02</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>6.56</b>	<b>26.0</b>	<0.01	<b>0.02</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>101</b>	<b>92.5</b>	<b>96.6</b>	<b>95.5</b>	<b>99.1</b>
13C8-PFOA	----	0.02	%	<b>113</b>	<b>113</b>	<b>114</b>	<b>109</b>	<b>107</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW123_231121	0908_MW124_231121	0908_MW125D_23112 1	0908_MW125S_23112 1	0908_MW126D_23112 3
Sampling date / time				21-Nov-2023 13:04	21-Nov-2023 14:18	21-Nov-2023 15:05	21-Nov-2023 15:04	23-Nov-2023 10:06
Compound	CAS Number	LOR	Unit	ES2341298-011	ES2341298-012	ES2341298-013	ES2341298-014	ES2341298-015
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.21</b>	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<b>0.02</b>	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.35</b>	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.02</b>	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.01</b>	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW123_231121	0908_MW124_231121	0908_MW125D_23112 1	0908_MW125S_23112 1	0908_MW126D_23112 3
Sampling date / time				21-Nov-2023 13:04	21-Nov-2023 14:18	21-Nov-2023 15:05	21-Nov-2023 15:04	23-Nov-2023 10:06
Compound	CAS Number	LOR	Unit	ES2341298-011	ES2341298-012	ES2341298-013	ES2341298-014	ES2341298-015
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.61</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.56</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.59</b>	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>91.8</b>	<b>97.0</b>	<b>98.6</b>	<b>92.8</b>	<b>107</b>
13C8-PFOA	----	0.02	%	<b>114</b>	<b>109</b>	<b>105</b>	<b>111</b>	<b>113</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW126S_23112 3	0908_MW128D_23112 8	0908_MW128S_23112 8	0908_MW130D_23112 7	0908_MW130S_23112 7
Sampling date / time				23-Nov-2023 10:03	28-Nov-2023 10:47	28-Nov-2023 10:50	27-Nov-2023 12:27	27-Nov-2023 12:27
Compound	CAS Number	LOR	Unit	ES2341298-016	ES2341298-017	ES2341298-018	ES2341298-019	ES2341298-020
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.55	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.72	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	7.06	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.80	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	4.25	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.23	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.31	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.19	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.35	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW126S_23112 3	0908_MW128D_23112 8	0908_MW128S_23112 8	0908_MW130D_23112 7	0908_MW130S_23112 7
Sampling date / time				23-Nov-2023 10:03	28-Nov-2023 10:47	28-Nov-2023 10:50	27-Nov-2023 12:27	27-Nov-2023 12:27
Compound	CAS Number	LOR	Unit	ES2341298-016	ES2341298-017	ES2341298-018	ES2341298-019	ES2341298-020
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	15.6	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	11.3	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	14.0	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	97.2	107	85.5	95.8	94.9
13C8-PFOA	----	0.02	%	105	117	114	111	102



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_23112 3	0908_MW132S_23112 3	0908_MW134D_23112 2	0908_MW134I_23112 2	0908_MW146AD_231 123
Sampling date / time				23-Nov-2023 14:01	23-Nov-2023 14:11	22-Nov-2023 10:31	22-Nov-2023 10:31	23-Nov-2023 11:07
Compound	CAS Number	LOR	Unit	ES2341298-021 Result	ES2341298-022 Result	ES2341298-023 Result	ES2341298-024 Result	ES2341298-025 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.23</b>	<b>0.05</b>	<b>0.01</b>	<b>0.02</b>	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<b>0.07</b>	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.78</b>	<b>0.18</b>	<0.01	<0.01	<b>0.03</b>
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.03</b>	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<b>0.02</b>	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW132D_23112 3	0908_MW132S_23112 3	0908_MW134D_23112 2	0908_MW134I_23112 2	0908_MW146AD_231 123
Sampling date / time				23-Nov-2023 14:01	23-Nov-2023 14:11	22-Nov-2023 10:31	22-Nov-2023 10:31	23-Nov-2023 11:07
Compound	CAS Number	LOR	Unit	ES2341298-021	ES2341298-022	ES2341298-023	ES2341298-024	ES2341298-025
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	1.13	0.23	0.01	0.02	0.03
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	1.01	0.23	0.01	0.02	0.03
Sum of PFAS (WA DER List)	----	0.01	µg/L	1.06	0.23	0.01	0.02	0.03
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	91.3	96.4	87.0	81.0	86.3
13C8-PFOA	----	0.02	%	97.9	104	96.1	97.1	104



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146S_23112 4	0908_MW156D_23112 3	0908_MW160_231123	0908_MW162D_23112 1	0908_MW162S_23112 1
Sampling date / time				24-Nov-2023 09:37	23-Nov-2023 09:14	23-Nov-2023 13:13	21-Nov-2023 10:06	21-Nov-2023 10:24
Compound	CAS Number	LOR	Unit	ES2341298-026 Result	ES2341298-027 Result	ES2341298-028 Result	ES2341298-029 Result	ES2341298-030 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<b>0.01</b>	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<b>0.01</b>	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW146S_23112 4	0908_MW156D_23112 3	0908_MW160_231123	0908_MW162D_23112 1	0908_MW162S_23112 1
Sampling date / time				24-Nov-2023 09:37	23-Nov-2023 09:14	23-Nov-2023 13:13	21-Nov-2023 10:06	21-Nov-2023 10:24
Compound	CAS Number	LOR	Unit	ES2341298-026	ES2341298-027	ES2341298-028	ES2341298-029	ES2341298-030
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	0.01	0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	0.01	0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	0.01	0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	89.1	92.3	95.4	91.2	86.8
13C8-PFOA	----	0.02	%	93.7	102	99.8	99.4	96.4





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW163_231128	0908_MW166_231122	0908_MW167_231122	0908_MW168_231122	0908_MW169D_231122
								2
Sampling date / time				28-Nov-2023 12:16	22-Nov-2023 10:18	22-Nov-2023 10:37	22-Nov-2023 10:30	22-Nov-2023 10:55
Compound	CAS Number	LOR	Unit	ES2341298-031	ES2341298-032	ES2341298-033	ES2341298-034	ES2341298-035
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.03	0.04	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.11	0.55	0.66	0.05
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.03	0.03	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	8.45	45.8	9.25	0.04
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.02	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.04	0.13	0.16	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.02	0.05	0.07	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW163_231128	0908_MW166_231122	0908_MW167_231122	0908_MW168_231122	0908_MW169D_231122
								2
Sampling date / time				28-Nov-2023 12:16	22-Nov-2023 10:18	22-Nov-2023 10:37	22-Nov-2023 10:30	22-Nov-2023 10:55
Compound	CAS Number	LOR	Unit	ES2341298-031	ES2341298-032	ES2341298-033	ES2341298-034	ES2341298-035
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<b>0.05</b>	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<b>8.65</b>	<b>46.7</b>	<b>10.3</b>	<b>0.09</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<b>8.56</b>	<b>46.4</b>	<b>9.91</b>	<b>0.09</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<b>8.62</b>	<b>46.6</b>	<b>10.2</b>	<b>0.09</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>88.2</b>	<b>94.6</b>	<b>99.3</b>	<b>92.9</b>	<b>86.2</b>
13C8-PFOA	----	0.02	%	<b>101</b>	<b>95.5</b>	<b>113</b>	<b>96.5</b>	<b>99.2</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169S_23112 2	0908_MW172_231122	0908_MW175D_23112 2	0908_MW178_231121	0908_MW179D_23112 2
Sampling date / time				22-Nov-2023 11:04	22-Nov-2023 11:33	22-Nov-2023 14:28	21-Nov-2023 14:43	22-Nov-2023 11:46
Compound	CAS Number	LOR	Unit	ES2341298-036 Result	ES2341298-037 Result	ES2341298-038 Result	ES2341298-039 Result	ES2341298-040 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.11	0.06	0.05	0.05
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.15	0.08	0.06	0.08
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.14	0.45	1.03	0.34	1.31
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.06	<0.02	0.06
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.04	3.36	0.10	3.69
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.12	<0.02	0.08
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.12	0.36	0.10	0.22
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.04	0.05	<0.02	0.03
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.03	0.10	0.01	0.06
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW169S_23112 2	0908_MW172_231122	0908_MW175D_23112 2	0908_MW178_231121	0908_MW179D_23112 2
Sampling date / time				22-Nov-2023 11:04	22-Nov-2023 11:33	22-Nov-2023 14:28	21-Nov-2023 14:43	22-Nov-2023 11:46
Compound	CAS Number	LOR	Unit	ES2341298-036	ES2341298-037	ES2341298-038	ES2341298-039	ES2341298-040
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<b>0.08</b>	<b>0.14</b>	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.20</b>	<b>0.94</b>	<b>5.30</b>	<b>0.80</b>	<b>5.58</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.18</b>	<b>0.49</b>	<b>4.39</b>	<b>0.44</b>	<b>5.00</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.20</b>	<b>0.79</b>	<b>5.16</b>	<b>0.74</b>	<b>5.44</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>86.9</b>	<b>95.1</b>	<b>98.0</b>	<b>94.8</b>	<b>90.2</b>
13C8-PFOA	----	0.02	%	<b>99.7</b>	<b>101</b>	<b>97.5</b>	<b>96.9</b>	<b>100</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179S_23112 2	0908_MW196_231122	0908_MW198_231122	0908_MW202D_23112 2	0908_MW202S_23112 2
Sampling date / time				22-Nov-2023 11:53	22-Nov-2023 09:13	22-Nov-2023 09:27	22-Nov-2023 11:37	22-Nov-2023 11:15
Compound	CAS Number	LOR	Unit	ES2341298-041 Result	ES2341298-042 Result	ES2341298-043 Result	ES2341298-044 Result	ES2341298-045 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.04	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.37	0.52	0.60	0.07	0.34
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.07	0.08	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.17	9.00	7.35	0.13	0.25
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.09	0.04	0.04	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.23	0.15	0.10	<0.02	0.04
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.02	0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.07	0.10	0.14	<0.01	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW179S_23112 2	0908_MW196_231122	0908_MW198_231122	0908_MW202D_23112 2	0908_MW202S_23112 2
Sampling date / time				22-Nov-2023 11:53	22-Nov-2023 09:13	22-Nov-2023 09:27	22-Nov-2023 11:37	22-Nov-2023 11:15
Compound	CAS Number	LOR	Unit	ES2341298-041 Result	ES2341298-042 Result	ES2341298-043 Result	ES2341298-044 Result	ES2341298-045 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.95</b>	<b>9.90</b>	<b>8.35</b>	<b>0.20</b>	<b>0.65</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.54</b>	<b>9.52</b>	<b>7.95</b>	<b>0.20</b>	<b>0.59</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.95</b>	<b>9.83</b>	<b>8.23</b>	<b>0.20</b>	<b>0.65</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>95.2</b>	<b>90.9</b>	<b>89.8</b>	<b>90.8</b>	<b>84.4</b>
13C8-PFOA	----	0.02	%	<b>99.0</b>	<b>97.6</b>	<b>97.4</b>	<b>96.5</b>	<b>96.5</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW208_231123	0908_MW212_231123	0908_MW232D_23112 4	0908_MW232S_23112 4	0908_MW240D_23112 2
Sampling date / time				23-Nov-2023 13:32	23-Nov-2023 08:37	24-Nov-2023 07:54	24-Nov-2023 07:51	22-Nov-2023 13:45
Compound	CAS Number	LOR	Unit	ES2341298-046	ES2341298-047	ES2341298-048	ES2341298-049	ES2341298-050
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.06	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	2.01	0.03	<0.01	<0.01	0.08
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.23	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	9.08	0.17	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.15	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.33	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.09	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.18	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	0.16	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW208_231123	0908_MW212_231123	0908_MW232D_23112 4	0908_MW232S_23112 4	0908_MW240D_23112 2
Sampling date / time				23-Nov-2023 13:32	23-Nov-2023 08:37	24-Nov-2023 07:54	24-Nov-2023 07:51	22-Nov-2023 13:45
Compound	CAS Number	LOR	Unit	ES2341298-046	ES2341298-047	ES2341298-048	ES2341298-049	ES2341298-050
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<b>0.05</b>	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>12.4</b>	<b>0.25</b>	<0.01	<0.01	<b>0.08</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>11.1</b>	<b>0.20</b>	<0.01	<0.01	<b>0.08</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>11.9</b>	<b>0.25</b>	<0.01	<0.01	<b>0.08</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>90.8</b>	<b>95.0</b>	<b>92.2</b>	<b>91.1</b>	<b>94.5</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>101</b>	<b>102</b>	<b>99.5</b>	<b>100</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_23112 3	0908_MW241S_23112 3	0908_MW244D_23112 2	0908_MW244S_23112 2	0908_MW247D_23112 4
Sampling date / time				23-Nov-2023 08:45	23-Nov-2023 09:17	22-Nov-2023 08:32	22-Nov-2023 08:34	24-Nov-2023 11:21
Compound	CAS Number	LOR	Unit	ES2341298-051 Result	ES2341298-052 Result	ES2341298-053 Result	ES2341298-054 Result	ES2341298-055 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.01</b>	<b>0.04</b>
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<b>0.07</b>
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW241D_23112 3	0908_MW241S_23112 3	0908_MW244D_23112 2	0908_MW244S_23112 2	0908_MW247D_23112 4
Sampling date / time				23-Nov-2023 08:45	23-Nov-2023 09:17	22-Nov-2023 08:32	22-Nov-2023 08:34	24-Nov-2023 11:21
Compound	CAS Number	LOR	Unit	ES2341298-051	ES2341298-052	ES2341298-053	ES2341298-054	ES2341298-055
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	0.01	0.11
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.01	0.11
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	0.01	0.11
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	86.8	91.0	88.0	102	96.5
13C8-PFOA	----	0.02	%	97.8	102	99.3	109	109



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW247S_23112 4	0908_MW256D_23112 1	0908_MW256S_23112 1	0908_MW257D_23112 1	0908_MW257S_23112 1
Sampling date / time				24-Nov-2023 11:15	21-Nov-2023 13:30	21-Nov-2023 13:31	21-Nov-2023 13:59	21-Nov-2023 13:59
Compound	CAS Number	LOR	Unit	ES2341298-056 Result	ES2341298-057 Result	ES2341298-058 Result	ES2341298-059 Result	ES2341298-060 Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.08</b>	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<b>0.23</b>	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<b>0.04</b>	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW247S_23112 4	0908_MW256D_23112 1	0908_MW256S_23112 1	0908_MW257D_23112 1	0908_MW257S_23112 1
Sampling date / time				24-Nov-2023 11:15	21-Nov-2023 13:30	21-Nov-2023 13:31	21-Nov-2023 13:59	21-Nov-2023 13:59
Compound	CAS Number	LOR	Unit	ES2341298-056 Result	ES2341298-057 Result	ES2341298-058 Result	ES2341298-059 Result	ES2341298-060 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.35</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.31</b>	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.35</b>	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>90.2</b>	<b>90.1</b>	<b>88.8</b>	<b>84.4</b>	<b>85.8</b>
13C8-PFOA	----	0.02	%	<b>101</b>	<b>99.5</b>	<b>101</b>	<b>98.4</b>	<b>98.7</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_23112 0	0908_MW258S_23112 0	0908_MW260D_23112 1	0908_MW260S_23112 1	0908_MW263D_23112 0
Sampling date / time				20-Nov-2023 13:32	20-Nov-2023 13:42	21-Nov-2023 14:44	21-Nov-2023 14:37	20-Nov-2023 13:00
Compound	CAS Number	LOR	Unit	ES2341298-061	ES2341298-062	ES2341298-063	ES2341298-064	ES2341298-065
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.03</b>	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW258D_23112 0	0908_MW258S_23112 0	0908_MW260D_23112 1	0908_MW260S_23112 1	0908_MW263D_23112 0
Sampling date / time				20-Nov-2023 13:32	20-Nov-2023 13:42	21-Nov-2023 14:44	21-Nov-2023 14:37	20-Nov-2023 13:00
Compound	CAS Number	LOR	Unit	ES2341298-061 Result	ES2341298-062 Result	ES2341298-063 Result	ES2341298-064 Result	ES2341298-065 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.03</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.03</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.03</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>90.1</b>	<b>87.3</b>	<b>90.0</b>	<b>86.0</b>	<b>88.4</b>
13C8-PFOA	----	0.02	%	<b>96.9</b>	<b>97.4</b>	<b>97.9</b>	<b>97.2</b>	<b>98.2</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_23112 0	0908_MW278D_23112 1	0908_MW278S_23112 1	0908_MW279S_23112 1	0908_MW280S_23112 3
Sampling date / time				20-Nov-2023 12:58	21-Nov-2023 15:30	21-Nov-2023 15:42	21-Nov-2023 13:37	23-Nov-2023 09:38
Compound	CAS Number	LOR	Unit	ES2341298-066	ES2341298-067	ES2341298-068	ES2341298-069	ES2341298-070
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.16	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.18	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	2.28	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	0.32	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.58	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW263S_23112 0	0908_MW278D_23112 1	0908_MW278S_23112 1	0908_MW279S_23112 1	0908_MW280S_23112 3
Sampling date / time				20-Nov-2023 12:58	21-Nov-2023 15:30	21-Nov-2023 15:42	21-Nov-2023 13:37	23-Nov-2023 09:38
Compound	CAS Number	LOR	Unit	ES2341298-066 Result	ES2341298-067 Result	ES2341298-068 Result	ES2341298-069 Result	ES2341298-070 Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>3.63</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>2.60</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<b>3.42</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>84.9</b>	<b>90.1</b>	<b>89.7</b>	<b>85.0</b>	<b>86.8</b>
13C8-PFOA	----	0.02	%	<b>99.7</b>	<b>97.6</b>	<b>98.0</b>	<b>100</b>	<b>104</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_23112 2	0908_MW282S_23112 2	0908_MW315D_23112 3	0908_MW315S_23112 3	0908_MW316D_23112 1
Sampling date / time				22-Nov-2023 13:48	22-Nov-2023 13:41	23-Nov-2023 11:20	23-Nov-2023 11:18	21-Nov-2023 12:20
Compound	CAS Number	LOR	Unit	ES2341298-071	ES2341298-072	ES2341298-073	ES2341298-074	ES2341298-075
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.48	0.13	0.10	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.57	0.10	0.04	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	12.8	1.34	0.16	0.02	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	3.97	0.22	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	99.8	0.90	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	0.3	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.36	0.09	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.89	0.46	0.08	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.32	0.05	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	2.62	0.15	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW281S_23112 2	0908_MW282S_23112 2	0908_MW315D_23112 3	0908_MW315S_23112 3	0908_MW316D_23112 1
Sampling date / time				22-Nov-2023 13:48	22-Nov-2023 13:41	23-Nov-2023 11:20	23-Nov-2023 11:18	21-Nov-2023 12:20
Compound	CAS Number	LOR	Unit	ES2341298-071	ES2341298-072	ES2341298-073	ES2341298-074	ES2341298-075
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>123</b>	<b>3.44</b>	<b>0.38</b>	<b>0.02</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>113</b>	<b>2.24</b>	<b>0.16</b>	<b>0.02</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>118</b>	<b>3.12</b>	<b>0.34</b>	<b>0.02</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>87.4</b>	<b>86.4</b>	<b>91.4</b>	<b>89.8</b>	<b>89.4</b>
13C8-PFOA	----	0.02	%	<b>96.3</b>	<b>97.3</b>	<b>96.4</b>	<b>97.7</b>	<b>100</b>



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW318D_23112 3	0908_MW318S_23112 3	0908_MW433_231123	0908_MW466_231122	0908_MW468_231122
Sampling date / time				23-Nov-2023 13:26	23-Nov-2023 13:33	23-Nov-2023 09:32	22-Nov-2023 14:24	22-Nov-2023 14:34
Compound	CAS Number	LOR	Unit	ES2341298-076	ES2341298-077	ES2341298-078	ES2341298-079	ES2341298-080
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.10	<0.02	<0.02	0.05	0.06
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.08	<0.02	<0.02	0.07	0.11
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.41	<0.01	0.01	1.14	1.35
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.39	0.16
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	<0.01	0.01	17.1	10.1
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	<0.02	<0.02	0.06	0.09
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.19	<0.02	<0.02	0.23	0.26
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.04	0.05
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	<0.01	<0.01	0.30	0.14
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	0.03
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW318D_23112 3	0908_MW318S_23112 3	0908_MW433_231123	0908_MW466_231122	0908_MW468_231122
Sampling date / time				23-Nov-2023 13:26	23-Nov-2023 13:33	23-Nov-2023 09:32	22-Nov-2023 14:24	22-Nov-2023 14:34
Compound	CAS Number	LOR	Unit	ES2341298-076	ES2341298-077	ES2341298-078	ES2341298-079	ES2341298-080
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<b>0.06</b>
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.86</b>	<0.01	<b>0.02</b>	<b>19.4</b>	<b>12.4</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.45</b>	<0.01	<b>0.02</b>	<b>18.2</b>	<b>11.4</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.78</b>	<0.01	<b>0.02</b>	<b>18.9</b>	<b>12.1</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>88.8</b>	<b>98.0</b>	<b>99.2</b>	<b>93.0</b>	<b>98.6</b>
13C8-PFOA	----	0.02	%	<b>100</b>	<b>100</b>	<b>106</b>	<b>108</b>	<b>109</b>



## Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0908_MW829_231123	0908_QC100_231121	0908_QC101_231121	0908_QC103_231123	0908_QC105_231123
				Sampling date / time	23-Nov-2023 13:02	21-Nov-2023 10:05	21-Nov-2023 14:07	23-Nov-2023 13:59	23-Nov-2023 14:23
Compound	CAS Number	LOR	Unit	ES2341298-081	ES2341298-082	ES2341298-083	ES2341298-084	ES2341298-085	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<b>0.03</b>	<0.01	<0.01	<b>0.20</b>	<b>0.04</b>	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<b>0.08</b>	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.74</b>	<b>0.18</b>	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<b>0.03</b>	<0.02	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<b>0.02</b>	<0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_MW829_231123	0908_QC100_231121	0908_QC101_231121	0908_QC103_231123	0908_QC105_231123
Sampling date / time				23-Nov-2023 13:02	21-Nov-2023 10:05	21-Nov-2023 14:07	23-Nov-2023 13:59	23-Nov-2023 14:23
Compound	CAS Number	LOR	Unit	ES2341298-081	ES2341298-082	ES2341298-083	ES2341298-084	ES2341298-085
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.03</b>	<0.01	<0.01	<b>1.07</b>	<b>0.22</b>
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.03</b>	<0.01	<0.01	<b>0.94</b>	<b>0.22</b>
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.03</b>	<0.01	<0.01	<b>0.99</b>	<b>0.22</b>
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>92.6</b>	<b>90.9</b>	<b>99.4</b>	<b>102</b>	<b>102</b>
13C8-PFOA	----	0.02	%	<b>109</b>	<b>106</b>	<b>110</b>	<b>104</b>	<b>108</b>





## Analytical Results

Sub-Matrix: GROUNDWATER  
 (Matrix: WATER)

Sample ID

				0908_QC106_231122	0908_QC107_231127	0908_QC109_231127	0908_QC112_231123	0908_QC114_231128
Sampling date / time				22-Nov-2023 10:56	27-Nov-2023 12:23	27-Nov-2023 12:24	23-Nov-2023 09:15	28-Nov-2023 10:24
Compound	CAS Number	LOR	Unit	ES2341298-086	ES2341298-087	ES2341298-088	ES2341298-089	ES2341298-090
				Result	Result	Result	Result	Result
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>0.09</b>	<0.01	<b>0.01</b>	<b>0.01</b>	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.09</b>	<0.01	<b>0.01</b>	<b>0.01</b>	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.09</b>	<0.01	<b>0.01</b>	<b>0.01</b>	<0.01
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>98.2</b>	<b>99.1</b>	<b>95.0</b>	<b>93.5</b>	<b>91.3</b>
13C8-PFOA	----	0.02	%	<b>107</b>	<b>105</b>	<b>107</b>	<b>105</b>	<b>112</b>





### Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2341298**  
Amendment : **3**

Page : 1 of 24

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : **LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**  
Contact : **[REDACTED]**  
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

Telephone : **----**  
Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**  
C-O-C number : **60092**  
Sampler : **[REDACTED]**  
Site : **0908\_Biannual**  
Quote number : **SY/139/19 v4 60612562\_2.1**  
No. of samples received : **90**  
No. of samples analysed : **90**

Telephone : **+61 2 8784 8555**  
Date Samples Received : **29-Nov-2023**  
Date Analysis Commenced : **30-Nov-2023**  
Issue Date : **13-Dec-2023**



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5467294)</b>									
ES2341298-001	0908_MW106D_231123	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.62	0.57	9.6	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.39	0.36	8.7	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341298-011	0908_MW123_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.21	0.21	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.35	0.36	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5467295)</b>									
ES2341298-020	0908_MW130S_231127	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341298-030	0908_MW162S_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5467295) - continued</b>									
ES2341298-030	0908_MW162S_231121	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5467298)</b>									
ES2341298-039	0908_MW178_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.34	0.36	5.2	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.10	0.11	12.3	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341298-049	0908_MW232S_231124	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5467303)</b>									
ES2341298-058	0908_MW256S_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341298-068	0908_MW278S_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5469726)</b>									
ES2341298-077	0908_MW318S_231123	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341298-087	0908_QC107_231127	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5469726) - continued</b>									
ES2341298-087	0908_QC107_231127	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5467294)</b>									
ES2341298-001	0908_MW106D_231123	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.02	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.09	0.08	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		ES2341298-011	0908_MW123_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	0.02	0.02	0.0	No Limit
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7			0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4			0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5467295)</b>									
ES2341298-020	0908_MW130S_231127	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5467295) - continued</b>									
ES2341298-020	0908_MW130S_231127	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341298-030	0908_MW162S_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5467298)</b>							
ES2341298-039	0908_MW178_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	0.09	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341298-049	0908_MW232S_231124	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5467303)</b>									
ES2341298-058	0908_MW256S_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341298-068	0908_MW278S_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5469726)</b>									
ES2341298-077	0908_MW318S_231123	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341298-087	0908_QC107_231127	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5469726) - continued</b>									
ES2341298-087	0908_QC107_231127	EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467294)</b>									
ES2341298-001	0908_MW106D_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-011	0908_MW123_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467295)</b>									
ES2341298-020	0908_MW130S_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit





Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467295) - continued</b>									
ES2341298-020	0908_MW130S_231127	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-030	0908_MW162S_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467298)</b>									
ES2341298-039	0908_MW178_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-049	0908_MW232S_231124	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467298) - continued</b>									
ES2341298-049	0908_MW232S_231124	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5467303)</b>									
ES2341298-058	0908_MW256S_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-068	0908_MW278S_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5469726)</b>									
ES2341298-077	0908_MW318S_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5469726) - continued</b>									
ES2341298-077	0908_MW318S_231123	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-087	0908_QC107_231127	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467294)</b>									
ES2341298-001	0908_MW106D_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-011	0908_MW123_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467295)</b>									
ES2341298-020	0908_MW130S_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467295) - continued</b>									
ES2341298-020	0908_MW130S_231127	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-030	0908_MW162S_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467298)</b>									
ES2341298-039	0908_MW178_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.14	<0.05	97.5	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-049	0908_MW232S_231124	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467303)</b>									
ES2341298-058	0908_MW256S_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5467303) - continued</b>									
ES2341298-068	0908_MW278S_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5469726)</b>									
ES2341298-077	0908_MW318S_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341298-087	0908_QC107_231127	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5467294)</b>									
ES2341298-001	0908_MW106D_231123	EP231X: Sum of PFAS	----	0.01	µg/L	1.23	1.14	7.6	0% - 20%
ES2341298-011	0908_MW123_231121	EP231X: Sum of PFAS	----	0.01	µg/L	0.61	0.62	1.6	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 5467295)</b>									
ES2341298-020	0908_MW130S_231127	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2341298-030	0908_MW162S_231121	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5467298)</b>									
ES2341298-039	0908_MW178_231121	EP231X: Sum of PFAS	----	0.01	µg/L	0.80	0.68	16.2	0% - 20%
ES2341298-049	0908_MW232S_231124	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5467303)</b>									
ES2341298-058	0908_MW256S_231121	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2341298-068	0908_MW278S_231121	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5469726)</b>									
ES2341298-077	0908_MW318S_231123	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

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 Work Order : ES2341298 Amendment 3  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP\_23



Sub-Matrix: <b>WATER</b>				<i>Laboratory Duplicate (DUP) Report</i>					
<i>Laboratory sample ID</i>	<i>Sample ID</i>	<i>Method: Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD (%)</i>	<i>Acceptable RPD (%)</i>
<b>EP231P: PFAS Sums (QC Lot: 5469726) - continued</b>									
ES2341298-087	0908_QC107_231127	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit



## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467294)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.9	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	75.9	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	90.7	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	79.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	76.7	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467295)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.8	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.1	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	82.9	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467298)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	73.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	83.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	90.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467303)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	83.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	83.2	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5469726)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	86.9	71.0	127



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5469726) - continued</b>								
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	83.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	76.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	82.5	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467294)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	81.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	81.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	83.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	83.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	76.9	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467295)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	98.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	100	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	97.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.2	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467298)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	87.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	96.3	71.0	133





Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467298) - continued</b>									
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	90.7	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.7	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	93.0	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467303)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	81.2	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.5	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	87.4	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	80.5	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.0	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	90.3	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	95.8	71.0	132	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5469726)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	79.6	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	87.0	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.3	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.3	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.7	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	79.6	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	82.6	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.8	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.0	71.0	132	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467294)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	72.2	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	74.2	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	79.2	62.6	147	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467294) - continued</b>									
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	75.2	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	80.5	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	77.1	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467295)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.9	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	102	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.2	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	106	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467298)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.3	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.8	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.1	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.5	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.2	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.3	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467303)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	78.0	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	78.6	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.7	66.0	145	



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467303) - continued</b>									
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.9	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.2	61.0	135	
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5469726)</b>									
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	85.6	67.0	137	
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.6	68.0	141	
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.8	62.6	147	
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	80.7	66.0	145	
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.1	57.6	145	
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	84.6	65.0	136	
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	80.5	61.0	135	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467294)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	80.8	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.4	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	101	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	91.1	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467295)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	105	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	101	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.7	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467298)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.0	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	95.3	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	113	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	98.4	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467303)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.1	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.4	64.0	140	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike	Spike Recovery (%)	Acceptable Limits (%)	
					Concentration	LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467303) - continued</b>								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5469726)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	85.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	79.9	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	92.5	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	85.6	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
						Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467294)</b>							
ES2341298-002	0908_MW106S_231123	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	77.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	91.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	70.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	92.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	77.3	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.9	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467295)</b>							
ES2341298-021	0908_MW132D_231123	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.7	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	108	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	124	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	83.4	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467298)</b>							
ES2341298-040	0908_MW179D_231122	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	77.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	107	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
Laboratory sample ID		Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467298) - continued</b>							
ES2341298-040	0908_MW179D_231122	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	96.3	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5467303)</b>							
ES2341298-059	0908_MW257D_231121	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	86.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	111	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	118	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	86.9	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	81.3	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5469726)</b>							
ES2341298-078	0908_MW433_231123	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.9	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	78.3	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.7	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	77.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	97.0	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467294)</b>							
ES2341298-002	0908_MW106S_231123	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	80.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	87.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.3	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	90.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	80.9	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	99.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	85.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	81.8	71.0	132
		<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467295)</b>					
ES2341298-021	0908_MW132D_231123	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	101	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	93.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	94.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	94.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	101	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	103	65.0	144



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467295) - continued</b>							
ES2341298-021	0908_MW132D_231123	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	94.0	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467298)</b>							
ES2341298-040	0908_MW179D_231122	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	81.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	86.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	96.3	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	89.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	79.1	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	93.7	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.4	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	92.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	92.1	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5467303)</b>							
ES2341298-059	0908_MW257D_231121	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	84.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	86.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	83.7	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.1	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.9	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	83.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	82.5	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5469726)</b>							
ES2341298-078	0908_MW433_231123	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	79.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	81.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	90.4	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	83.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	90.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	86.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.7	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	89.4	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467294)</b>							





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467294) - continued</b>							
ES2341298-002	0908_MW106S_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.8	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	78.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	83.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	82.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.9	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	87.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.4	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467295)</b>							
ES2341298-021	0908_MW132D_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	103	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	84.5	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	84.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	102	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	105	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	93.2	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467298)</b>							
ES2341298-040	0908_MW179D_231122	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	89.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	75.7	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	95.5	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.5	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467303)</b>							



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5467303) - continued</b>							
ES2341298-059	0908_MW257D_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	99.7	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	100	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	88.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	109	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	83.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	97.6	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5469726)</b>							
ES2341298-078	0908_MW433_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	94.9	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	94.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	80.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	88.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	79.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.2	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467294)</b>							
ES2341298-002	0908_MW106S_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	107	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	77.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	103	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	91.4	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467295)</b>							
ES2341298-021	0908_MW132D_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	88.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	86.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	93.9	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	82.1	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467298)</b>							
ES2341298-040	0908_MW179D_231122	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	66.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	107	64.0	140





Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467298) - continued</b>							
ES2341298-040	0908_MW179D_231122	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	120	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	84.7	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5467303)</b>							
ES2341298-059	0908_MW257D_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	84.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	93.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	114	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	81.4	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5469726)</b>							
ES2341298-078	0908_MW433_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	75.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	90.3	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.4	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order : ES2341298

Page : 1 of 14

Amendment : 3

Client : AECOM AUSTRALIA PTY LTD

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023

Site : 0908\_Biannual

Issue Date : 13-Dec-2023

Sampler : [REDACTED] [REDACTED]

No. of samples received : 90

Order number : 60612562\_2.1

No. of samples analysed : 90

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



### Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2341298--040	0908_MW179D_231122	Perfluorohexane sulfonic acid (PFHxS)	355-46-4	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.
EP231A: Perfluoroalkyl Sulfonic Acids	ES2341298--040	0908_MW179D_231122	Perfluorooctane sulfonic acid (PFOS)	1763-23-1	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

### Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW121_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	06-Dec-2023	18-May-2024	✓	
HDPE (no PTFE) (EP231X) 0908_MW258D_231120, 0908_MW263D_231120,	0908_MW258S_231120, 0908_MW263S_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	07-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW122_231121, 0908_MW124_231121, 0908_MW125S_231121	0908_MW123_231121, 0908_MW125D_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW162D_231121, 0908_MW178_231121, 0908_MW256S_231121, 0908_MW257S_231121, 0908_MW260S_231121, 0908_MW278S_231121, 0908_MW316D_231121	0908_MW162S_231121, 0908_MW256D_231121, 0908_MW257D_231121, 0908_MW260D_231121, 0908_MW278D_231121, 0908_MW279S_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	07-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC100_231121,	0908_QC101_231121	21-Nov-2023	06-Dec-2023	19-May-2024	✓	08-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X)								





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids - Continued</b>								
0908_MW118_231128, 0908_MW128S_231128	0908_MW128D_231128,	28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW163_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	07-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_231128		28-Nov-2023	06-Dec-2023	26-May-2024	✓	08-Dec-2023	26-May-2024	✓



Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW121_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	06-Dec-2023	18-May-2024	✓	
HDPE (no PTFE) (EP231X) 0908_MW258D_231120, 0908_MW263D_231120,	0908_MW258S_231120, 0908_MW263S_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	07-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW122_231121, 0908_MW124_231121, 0908_MW125S_231121	0908_MW123_231121, 0908_MW125D_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW162D_231121, 0908_MW178_231121, 0908_MW256S_231121, 0908_MW257S_231121, 0908_MW260S_231121, 0908_MW278S_231121, 0908_MW316D_231121	0908_MW162S_231121, 0908_MW256D_231121, 0908_MW257D_231121, 0908_MW260D_231121, 0908_MW278D_231121, 0908_MW279S_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	07-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC100_231121,	0908_QC101_231121	21-Nov-2023	06-Dec-2023	19-May-2024	✓	08-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW108D_231122, 0908_MW109D_231122	0908_MW108S_231122,	22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW134D_231122, 0908_MW166_231122, 0908_MW168_231122, 0908_MW169S_231122, 0908_MW175D_231122, 0908_MW179S_231122, 0908_MW198_231122, 0908_MW202S_231122, 0908_MW244D_231122, 0908_MW281S_231122,	0908_MW134I_231122, 0908_MW167_231122, 0908_MW169D_231122, 0908_MW172_231122, 0908_MW179D_231122, 0908_MW196_231122, 0908_MW202D_231122, 0908_MW240D_231122, 0908_MW244S_231122, 0908_MW282S_231122	22-Nov-2023	05-Dec-2023	20-May-2024	✓	07-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW466_231122, 0908_QC106_231122	0908_MW468_231122,	22-Nov-2023	06-Dec-2023	20-May-2024	✓	08-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW106D_231123, 0908_MW107D_231123, 0908_MW126D_231123,	0908_MW106S_231123, 0908_MW107S_231123, 0908_MW126S_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X)								



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids - Continued</b>								
0908_MW132D_231123, 0908_MW146AD_231123, 0908_MW160_231123, 0908_MW212_231123, 0908_MW241S_231123, 0908_MW315D_231123, 0908_MW318D_231123	0908_MW132S_231123, 0908_MW156D_231123, 0908_MW208_231123, 0908_MW241D_231123, 0908_MW280S_231123, 0908_MW315S_231123,	23-Nov-2023	05-Dec-2023	21-May-2024	✓	07-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW318S_231123, 0908_MW829_231123, 0908_QC105_231123,	0908_MW433_231123, 0908_QC103_231123, 0908_QC112_231123	23-Nov-2023	06-Dec-2023	21-May-2024	✓	08-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW146S_231124, 0908_MW232S_231124, 0908_MW247S_231124	0908_MW232D_231124, 0908_MW247D_231124,	24-Nov-2023	05-Dec-2023	22-May-2024	✓	07-Dec-2023	22-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130D_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	06-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130S_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	07-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_231127,	0908_QC109_231127	27-Nov-2023	06-Dec-2023	25-May-2024	✓	08-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_231128, 0908_MW128S_231128	0908_MW128D_231128,	28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW163_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	07-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_231128		28-Nov-2023	06-Dec-2023	26-May-2024	✓	08-Dec-2023	26-May-2024	✓



Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_MW121_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	06-Dec-2023	18-May-2024	✓	
HDPE (no PTFE) (EP231X) 0908_MW258D_231120, 0908_MW263D_231120,	0908_MW258S_231120, 0908_MW263S_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	07-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW122_231121, 0908_MW124_231121, 0908_MW125S_231121	0908_MW123_231121, 0908_MW125D_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW162D_231121, 0908_MW178_231121, 0908_MW256S_231121, 0908_MW257S_231121, 0908_MW260S_231121, 0908_MW278S_231121, 0908_MW316D_231121	0908_MW162S_231121, 0908_MW256D_231121, 0908_MW257D_231121, 0908_MW260D_231121, 0908_MW278D_231121, 0908_MW279S_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	07-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC100_231121,	0908_QC101_231121	21-Nov-2023	06-Dec-2023	19-May-2024	✓	08-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW108D_231122, 0908_MW109D_231122	0908_MW108S_231122,	22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW134D_231122, 0908_MW166_231122, 0908_MW168_231122, 0908_MW169S_231122, 0908_MW175D_231122, 0908_MW179S_231122, 0908_MW198_231122, 0908_MW202S_231122, 0908_MW244D_231122, 0908_MW281S_231122,	0908_MW134I_231122, 0908_MW167_231122, 0908_MW169D_231122, 0908_MW172_231122, 0908_MW179D_231122, 0908_MW196_231122, 0908_MW202D_231122, 0908_MW240D_231122, 0908_MW244S_231122, 0908_MW282S_231122	22-Nov-2023	05-Dec-2023	20-May-2024	✓	07-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW466_231122, 0908_QC106_231122	0908_MW468_231122,	22-Nov-2023	06-Dec-2023	20-May-2024	✓	08-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW106D_231123, 0908_MW107D_231123, 0908_MW126D_231123,	0908_MW106S_231123, 0908_MW107S_231123, 0908_MW126S_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X)								





Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
0908_MW132D_231123, 0908_MW146AD_231123, 0908_MW160_231123, 0908_MW212_231123, 0908_MW241S_231123, 0908_MW315D_231123, 0908_MW318D_231123	0908_MW132S_231123, 0908_MW156D_231123, 0908_MW208_231123, 0908_MW241D_231123, 0908_MW280S_231123, 0908_MW315S_231123,	23-Nov-2023	05-Dec-2023	21-May-2024	✓	07-Dec-2023	21-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW318S_231123, 0908_MW829_231123, 0908_QC105_231123,	0908_MW433_231123, 0908_QC103_231123, 0908_QC112_231123	23-Nov-2023	06-Dec-2023	21-May-2024	✓	08-Dec-2023	21-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW146S_231124, 0908_MW232S_231124, 0908_MW247S_231124	0908_MW232D_231124, 0908_MW247D_231124,	24-Nov-2023	05-Dec-2023	22-May-2024	✓	07-Dec-2023	22-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130D_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	06-Dec-2023	25-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130S_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	07-Dec-2023	25-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_231127,	0908_QC109_231127	27-Nov-2023	06-Dec-2023	25-May-2024	✓	08-Dec-2023	25-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_231128, 0908_MW128S_231128	0908_MW128D_231128,	28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	26-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW163_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	07-Dec-2023	26-May-2024	✓	
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_231128		28-Nov-2023	06-Dec-2023	26-May-2024	✓	08-Dec-2023	26-May-2024	✓	



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_MW121_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	06-Dec-2023	18-May-2024	✓	
HDPE (no PTFE) (EP231X) 0908_MW258D_231120, 0908_MW263D_231120,	0908_MW258S_231120, 0908_MW263S_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	07-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW122_231121, 0908_MW124_231121, 0908_MW125S_231121	0908_MW123_231121, 0908_MW125D_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW162D_231121, 0908_MW178_231121, 0908_MW256S_231121, 0908_MW257S_231121, 0908_MW260S_231121, 0908_MW278S_231121, 0908_MW316D_231121	0908_MW162S_231121, 0908_MW256D_231121, 0908_MW257D_231121, 0908_MW260D_231121, 0908_MW278D_231121, 0908_MW279S_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	07-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC100_231121,	0908_QC101_231121	21-Nov-2023	06-Dec-2023	19-May-2024	✓	08-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW108D_231122, 0908_MW109D_231122	0908_MW108S_231122,	22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW134D_231122, 0908_MW166_231122, 0908_MW168_231122, 0908_MW169S_231122, 0908_MW175D_231122, 0908_MW179S_231122, 0908_MW198_231122, 0908_MW202S_231122, 0908_MW244D_231122, 0908_MW281S_231122,	0908_MW134I_231122, 0908_MW167_231122, 0908_MW169D_231122, 0908_MW172_231122, 0908_MW179D_231122, 0908_MW196_231122, 0908_MW202D_231122, 0908_MW240D_231122, 0908_MW244S_231122, 0908_MW282S_231122	22-Nov-2023	05-Dec-2023	20-May-2024	✓	07-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW466_231122, 0908_QC106_231122	0908_MW468_231122,	22-Nov-2023	06-Dec-2023	20-May-2024	✓	08-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW106D_231123, 0908_MW107D_231123, 0908_MW126D_231123,	0908_MW106S_231123, 0908_MW107S_231123, 0908_MW126S_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X)								



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued</b>								
0908_MW132D_231123, 0908_MW146AD_231123, 0908_MW160_231123, 0908_MW212_231123, 0908_MW241S_231123, 0908_MW315D_231123, 0908_MW318D_231123	0908_MW132S_231123, 0908_MW156D_231123, 0908_MW208_231123, 0908_MW241D_231123, 0908_MW280S_231123, 0908_MW315S_231123,	23-Nov-2023	05-Dec-2023	21-May-2024	✓	07-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW318S_231123, 0908_MW829_231123, 0908_QC105_231123,	0908_MW433_231123, 0908_QC103_231123, 0908_QC112_231123	23-Nov-2023	06-Dec-2023	21-May-2024	✓	08-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW146S_231124, 0908_MW232S_231124, 0908_MW247S_231124	0908_MW232D_231124, 0908_MW247D_231124,	24-Nov-2023	05-Dec-2023	22-May-2024	✓	07-Dec-2023	22-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130D_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	06-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130S_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	07-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_231127,	0908_QC109_231127	27-Nov-2023	06-Dec-2023	25-May-2024	✓	08-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_231128, 0908_MW128S_231128	0908_MW128D_231128,	28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW163_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	07-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_231128		28-Nov-2023	06-Dec-2023	26-May-2024	✓	08-Dec-2023	26-May-2024	✓



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_MW121_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	06-Dec-2023	18-May-2024	✓	
HDPE (no PTFE) (EP231X) 0908_MW258D_231120, 0908_MW263D_231120,	0908_MW258S_231120, 0908_MW263S_231120	20-Nov-2023	05-Dec-2023	18-May-2024	✓	07-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW122_231121, 0908_MW124_231121, 0908_MW125S_231121	0908_MW123_231121, 0908_MW125D_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW162D_231121, 0908_MW178_231121, 0908_MW256S_231121, 0908_MW257S_231121, 0908_MW260S_231121, 0908_MW278S_231121, 0908_MW316D_231121	0908_MW162S_231121, 0908_MW256D_231121, 0908_MW257D_231121, 0908_MW260D_231121, 0908_MW278D_231121, 0908_MW279S_231121,	21-Nov-2023	05-Dec-2023	19-May-2024	✓	07-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC100_231121,	0908_QC101_231121	21-Nov-2023	06-Dec-2023	19-May-2024	✓	08-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW108D_231122, 0908_MW109D_231122	0908_MW108S_231122,	22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW134D_231122, 0908_MW166_231122, 0908_MW168_231122, 0908_MW169S_231122, 0908_MW175D_231122, 0908_MW179S_231122, 0908_MW198_231122, 0908_MW202S_231122, 0908_MW244D_231122, 0908_MW281S_231122,	0908_MW134I_231122, 0908_MW167_231122, 0908_MW169D_231122, 0908_MW172_231122, 0908_MW179D_231122, 0908_MW196_231122, 0908_MW202D_231122, 0908_MW240D_231122, 0908_MW244S_231122, 0908_MW282S_231122	22-Nov-2023	05-Dec-2023	20-May-2024	✓	07-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW466_231122, 0908_QC106_231122	0908_MW468_231122,	22-Nov-2023	06-Dec-2023	20-May-2024	✓	08-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_MW106D_231123, 0908_MW107D_231123, 0908_MW126D_231123,	0908_MW106S_231123, 0908_MW107S_231123, 0908_MW126S_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X)								



Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums - Continued</b>								
0908_MW132D_231123, 0908_MW146AD_231123, 0908_MW160_231123, 0908_MW212_231123, 0908_MW241S_231123, 0908_MW315D_231123, 0908_MW318D_231123	0908_MW132S_231123, 0908_MW156D_231123, 0908_MW208_231123, 0908_MW241D_231123, 0908_MW280S_231123, 0908_MW315S_231123,	23-Nov-2023	05-Dec-2023	21-May-2024	✓	07-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW318S_231123, 0908_MW829_231123, 0908_QC105_231123,	0908_MW433_231123, 0908_QC103_231123, 0908_QC112_231123	23-Nov-2023	06-Dec-2023	21-May-2024	✓	08-Dec-2023	21-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW146S_231124, 0908_MW232S_231124, 0908_MW247S_231124	0908_MW232D_231124, 0908_MW247D_231124,	24-Nov-2023	05-Dec-2023	22-May-2024	✓	07-Dec-2023	22-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130D_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	06-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW130S_231127		27-Nov-2023	05-Dec-2023	25-May-2024	✓	07-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC107_231127,	0908_QC109_231127	27-Nov-2023	06-Dec-2023	25-May-2024	✓	08-Dec-2023	25-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW118_231128, 0908_MW128S_231128	0908_MW128D_231128,	28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_MW163_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	07-Dec-2023	26-May-2024	✓
<b>HDPE (no PTFE) (EP231X)</b> 0908_QC114_231128		28-Nov-2023	06-Dec-2023	26-May-2024	✓	08-Dec-2023	26-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	10	90	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	90	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	90	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	90	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.



## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341298**  
Amendment : **3**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

Project : NSW\_0908\_PFASOMP\_23  
Order number : 60612562\_2.1

C-O-C number : 60092  
Site : 0908\_Biannual  
Sampler : [REDACTED]

Laboratory : Environmental Division Sydney  
Contact : [REDACTED]  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : [REDACTED]  
Telephone : +61 2 8784 8555  
Facsimile : +61-2-8784 8500

Page : 1 of 4  
Quote number : ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)  
QC Level : NEPM 2013 B3 & ALS QC Standard

### Dates

Date Samples Received : 29-Nov-2023 15:20  
Client Requested Due Date : 08-Dec-2023  
Issue Date : 13-Dec-2023  
Scheduled Reporting Date : **08-Dec-2023**

### Delivery Details

Mode of Delivery : Client Drop Off  
No. of coolers/boxes : 5  
Receipt Detail :

Security Seal : Intact.  
Temperature : 10.1°C & 9.0°C & 12.0°C -  
Ice present  
No. of samples received / analysed : 90 / 90

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341298-001	23-Nov-2023 08:18	0908_MW106D_231123	✓
ES2341298-002	23-Nov-2023 08:17	0908_MW106S_231123	✓
ES2341298-003	23-Nov-2023 10:38	0908_MW107D_231123	✓
ES2341298-004	23-Nov-2023 10:37	0908_MW107S_231123	✓
ES2341298-005	22-Nov-2023 14:07	0908_MW108D_231122	✓
ES2341298-006	22-Nov-2023 14:05	0908_MW108S_231122	✓
ES2341298-007	22-Nov-2023 14:47	0908_MW109D_231122	✓
ES2341298-008	28-Nov-2023 10:24	0908_MW118_231128	✓
ES2341298-009	20-Nov-2023 14:57	0908_MW121_231120	✓
ES2341298-010	21-Nov-2023 10:55	0908_MW122_231121	✓
ES2341298-011	21-Nov-2023 13:04	0908_MW123_231121	✓
ES2341298-012	21-Nov-2023 14:18	0908_MW124_231121	✓
ES2341298-013	21-Nov-2023 15:05	0908_MW125D_231121	✓
ES2341298-014	21-Nov-2023 15:04	0908_MW125S_231121	✓
ES2341298-015	23-Nov-2023 10:06	0908_MW126D_231123	✓
ES2341298-016	23-Nov-2023 10:03	0908_MW126S_231123	✓
ES2341298-017	28-Nov-2023 10:47	0908_MW128D_231128	✓
ES2341298-018	28-Nov-2023 10:50	0908_MW128S_231128	✓
ES2341298-019	27-Nov-2023 12:27	0908_MW130D_231127	✓
ES2341298-020	27-Nov-2023 12:27	0908_MW130S_231127	✓
ES2341298-021	23-Nov-2023 14:01	0908_MW132D_231123	✓
ES2341298-022	23-Nov-2023 14:11	0908_MW132S_231123	✓
ES2341298-023	22-Nov-2023 10:31	0908_MW134D_231122	✓
ES2341298-024	22-Nov-2023 10:31	0908_MW134I_231122	✓
ES2341298-025	23-Nov-2023 11:07	0908_MW146AD_231123	✓
ES2341298-026	24-Nov-2023 09:37	0908_MW146S_231124	✓
ES2341298-027	23-Nov-2023 09:14	0908_MW156D_231123	✓
ES2341298-028	23-Nov-2023 13:13	0908_MW160_231123	✓
ES2341298-029	21-Nov-2023 10:06	0908_MW162D_231121	✓
ES2341298-030	21-Nov-2023 10:24	0908_MW162S_231121	✓
ES2341298-031	28-Nov-2023 12:16	0908_MW163_231128	✓
ES2341298-032	22-Nov-2023 10:18	0908_MW166_231122	✓
ES2341298-033	22-Nov-2023 10:37	0908_MW167_231122	✓
ES2341298-034	22-Nov-2023 10:30	0908_MW168_231122	✓
ES2341298-035	22-Nov-2023 10:55	0908_MW169D_231122	✓



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341298-036	22-Nov-2023 11:04	0908_MW169S_231122	✓	
ES2341298-037	22-Nov-2023 11:33	0908_MW172_231122	✓	
ES2341298-038	22-Nov-2023 14:28	0908_MW175D_231122	✓	
ES2341298-039	21-Nov-2023 14:43	0908_MW178_231121	✓	
ES2341298-040	22-Nov-2023 11:46	0908_MW179D_231122	✓	
ES2341298-041	22-Nov-2023 11:53	0908_MW179S_231122	✓	
ES2341298-042	22-Nov-2023 09:13	0908_MW196_231122	✓	
ES2341298-043	22-Nov-2023 09:27	0908_MW198_231122	✓	
ES2341298-044	22-Nov-2023 11:37	0908_MW202D_231122	✓	
ES2341298-045	22-Nov-2023 11:15	0908_MW202S_231122	✓	
ES2341298-046	23-Nov-2023 13:32	0908_MW208_231123	✓	
ES2341298-047	23-Nov-2023 08:37	0908_MW212_231123	✓	
ES2341298-048	24-Nov-2023 07:54	0908_MW232D_231124	✓	
ES2341298-049	24-Nov-2023 07:51	0908_MW232S_231124	✓	
ES2341298-050	22-Nov-2023 13:45	0908_MW240D_231122	✓	
ES2341298-051	23-Nov-2023 08:45	0908_MW241D_231123	✓	
ES2341298-052	23-Nov-2023 09:17	0908_MW241S_231123	✓	
ES2341298-053	22-Nov-2023 08:32	0908_MW244D_231122	✓	
ES2341298-054	22-Nov-2023 08:34	0908_MW244S_231122	✓	
ES2341298-055	24-Nov-2023 11:21	0908_MW247D_231124	✓	
ES2341298-056	24-Nov-2023 11:15	0908_MW247S_231124	✓	
ES2341298-057	21-Nov-2023 13:30	0908_MW256D_231121	✓	
ES2341298-058	21-Nov-2023 13:31	0908_MW256S_231121	✓	
ES2341298-059	21-Nov-2023 13:59	0908_MW257D_231121	✓	
ES2341298-060	21-Nov-2023 13:59	0908_MW257S_231121	✓	
ES2341298-061	20-Nov-2023 13:32	0908_MW258D_231120	✓	
ES2341298-062	20-Nov-2023 13:42	0908_MW258S_231120	✓	
ES2341298-063	21-Nov-2023 14:44	0908_MW260D_231121	✓	
ES2341298-064	21-Nov-2023 14:37	0908_MW260S_231121	✓	
ES2341298-065	20-Nov-2023 13:00	0908_MW263D_231120	✓	
ES2341298-066	20-Nov-2023 12:58	0908_MW263S_231120	✓	
ES2341298-067	21-Nov-2023 15:30	0908_MW278D_231121	✓	
ES2341298-068	21-Nov-2023 15:42	0908_MW278S_231121	✓	
ES2341298-069	21-Nov-2023 13:37	0908_MW279S_231121	✓	
ES2341298-070	23-Nov-2023 09:38	0908_MW280S_231123	✓	
ES2341298-071	22-Nov-2023 13:48	0908_MW281S_231122	✓	
ES2341298-072	22-Nov-2023 13:41	0908_MW282S_231122	✓	
ES2341298-073	23-Nov-2023 11:20	0908_MW315D_231123	✓	
ES2341298-074	23-Nov-2023 11:18	0908_MW315S_231123	✓	
ES2341298-075	21-Nov-2023 12:20	0908_MW316D_231121	✓	
ES2341298-076	23-Nov-2023 13:26	0908_MW318D_231123	✓	



				WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341298-077	23-Nov-2023 13:33	0908_MW318S_231123	✓	
ES2341298-078	23-Nov-2023 09:32	0908_MW433_231123	✓	
ES2341298-079	22-Nov-2023 14:24	0908_MW466_231122	✓	
ES2341298-080	22-Nov-2023 14:34	0908_MW468_231122	✓	
ES2341298-081	23-Nov-2023 13:02	0908_MW829_231123	✓	
ES2341298-082	21-Nov-2023 10:05	0908_QC100_231121	✓	
ES2341298-083	21-Nov-2023 14:07	0908_QC101_231121	✓	
ES2341298-084	23-Nov-2023 13:59	0908_QC103_231123	✓	
ES2341298-085	23-Nov-2023 14:23	0908_QC105_231123	✓	
ES2341298-086	22-Nov-2023 10:56	0908_QC106_231122	✓	
ES2341298-087	27-Nov-2023 12:23	0908_QC107_231127	✓	
ES2341298-088	27-Nov-2023 12:24	0908_QC109_231127	✓	
ES2341298-089	23-Nov-2023 09:15	0908_QC112_231123	✓	
ES2341298-090	28-Nov-2023 10:24	0908_QC114_231128	✓	

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

#### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



#### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au

- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

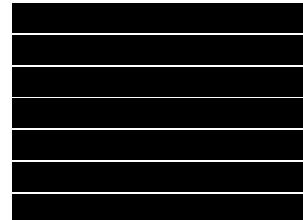
Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email



**ALS** **CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *ML*  
DATE TIME: 29/11/23 15:20

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE DETAILS				ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0908_MMV106D_231123		23/11/2023 08:18 AM	WATER	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
002	0908_MMV106S_231123		23/11/2023 08:17 AM	WATER	ALS: 4 Non ALS: 0	No	X	
003	0908_MMV107D_231123		23/11/2023 10:36 AM	WATER	ALS: 4 Non ALS: 0	No	X	
004	0908_MMV107S_231123		23/11/2023 10:37 AM	WATER	ALS: 4 Non ALS: 0	No	X	
005	0908_MMV108D_231122		22/11/2023 02:07 PM	WATER	ALS: 4 Non ALS: 0	No	X	
006	0908_MMV108S_231122		22/11/2023 02:05 PM	WATER	ALS: 4 Non ALS: 0	No	X	
007	0908_MMV109D_231122		22/11/2023 02:47 PM	WATER	ALS: 4 Non ALS: 0	No	X	



Environmental Division  
Sydney  
Work Order Reference  
**ES2341298**

Telephone : + 61-2-9794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5COMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0908_MMV18_231128		21/11/2023 09:08 AM	WATER	ALS: 4 Non ALS: 0	No	X	
009	0908_MMV121_231120		20/11/2023 02:46 PM	WATER	ALS: 4 Non ALS: 0	No	X	
010	0908_MMV122_231121		21/11/2023 10:55 AM	WATER	ALS: 4 Non ALS: 0	No	X	
011	0908_MMV123_231121		21/11/2023 01:04 PM	WATER	ALS: 4 Non ALS: 0	No	X	
012	0908_MMV124_231121		21/11/2023 02:18 PM	WATER	ALS: 4 Non ALS: 0	No	X	
013	0908_MMV125D_231121		21/11/2023 03:05 PM	WATER	ALS: 4 Non ALS: 0	No	X	
014	0908_MMV125S_231121		21/11/2023 03:04 PM	WATER	ALS: 4 Non ALS: 0	No	X	

**CHAIN OF CUSTODY**  
 ALS COCH#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

SAMPLE DETAILS				ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0908_MMV126D_231123		23/11/2023 10:06 AM	WATER	ALS:4 Non ALS: 0	No	X		
016	0908_MMV128S_231123		23/11/2023 10:03 AM	WATER	ALS:4 Non ALS: 0	No	X		
017	0908_MMV128D_231128		21/11/2023 10:42 AM	WATER	ALS:4 Non ALS: 0	No	X		
018	0908_MMV128S_231128		28/11/2023 10:50 AM	WATER	ALS:4 Non ALS: 0	No	X		
019	0908_MMV130D_231127		27/11/2023 12:27 PM	WATER	ALS:4 Non ALS: 0	No	X		
020	0908_MMV130S_231127		27/11/2023 12:27 PM	WATER	ALS:4 Non ALS: 0	No	X		
021	0908_MMV132D_231123		23/11/2023 02:04 PM	WATER	ALS:4 Non ALS: 0	No	X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Blanranal

ORDER NO:

PROJECT MANAGER  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
022	0908_MMV132S_231123		23/11/2023 02:11 PM	WATER	ALS:4 Non ALS:0	No	X	PFAS Waters - New Analysis
023	0908_MMV134D_231122		22/11/2023 10:31 AM	WATER	ALS:4 Non ALS:0	No	X	
024	0908_MMV134L_231122		22/11/2023 10:31 AM	WATER	ALS:4 Non ALS:0	No	X	
025	0908_MMV146AD_231123		23/11/2023 11:07 AM	WATER	ALS:4 Non ALS:0	No	X	
026	0908_MMV146S_231124		24/11/2023 09:37 AM	WATER	ALS:4 Non ALS:0	No	X	
027	0908_MMV156D_231123		23/11/2023 09:14 AM	WATER	ALS:4 Non ALS:0	No	X	
028	0908_MMV160_231123		23/11/2023 01:13 PM	WATER	ALS:4 Non ALS:0	No	X	

**CHAIN OF CUSTODY**

ALS COC#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0908_MMV162D_231121		24/11/2023 10:06 AM	WATER	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
030	0908_MMV162S_231121		24/11/2023 10:02 AM	WATER	ALS: 4 Non ALS: 0	No	X	
031	0908_MMV163_231128		28/11/2023 12:16 PM	WATER	ALS: 4 Non ALS: 0	No	X	
032	0908_MMV166_231122		22/11/2023 10:18 AM	WATER	ALS: 4 Non ALS: 0	No	X	
033	0908_MMV167_231122		22/11/2023 10:37 AM	WATER	ALS: 4 Non ALS: 0	No	X	
034	0908_MMV168_231122		22/11/2023 10:30 AM	WATER	ALS: 4 Non ALS: 0	No	X	
035	0908_MMV169D_231122		22/11/2023 10:55 AM	WATER	ALS: 4 Non ALS: 0	No	X	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		<b>LABORATORY USE ONLY (Circle)</b>	
Biohazard info:		Custody Seal Intact? Yes No N/A	
		Free Ice / Frozen ice bricks present upon receipt? Yes No N/A	
		Random Sample Temperature on Receipt: C	
		Other comments:	

SAMPLE DETAILS					ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
036	0908_MMV169S_231122		22/11/2023 10:52 AM	WATER	ALS: 3 Non ALS: 0	No	X		
037	0908_MMV172_231122		22/11/2023 11:33 AM	WATER	ALS: 4 Non ALS: 0	No	X		
038	0908_MMV175D_231122		22/11/2023 02:28 PM	WATER	ALS: 4 Non ALS: 0	No	X		
039	0908_MMV178_231121		21/11/2023 02:43 PM	WATER	ALS: 4 Non ALS: 0	No	X		
040	0908_MMV179D_231122		22/11/2023 11:46 AM	WATER	ALS: 4 Non ALS: 0	No	X		
041	0908_MMV179S_231122		22/11/2023 11:53 AM	WATER	ALS: 4 Non ALS: 0	No	X		
042	0908_MMV196_231122		22/11/2023 09:13 AM	WATER	ALS: 4 Non ALS: 0	No	X		

**CHAIN OF CUSTODY**

ALS COC#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:

PRIMARY SAMPLER:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
043	0908_MMV198_231122		22/11/2023 09:27 AM	WATER	ALS:4 Non ALS:0	No	X	
044	0908_MMV202D_231122		22/11/2023 11:37 AM	WATER	ALS:4 Non ALS:0	No	X	
045	0908_MMV202S_231122		22/11/2023 11:15 AM	WATER	ALS:4 Non ALS:0	No	X	
046	0908_MMV208_231123		23/11/2023 01:32 PM	WATER	ALS:3 Non ALS:0	No	X	
047	0908_MMV212_231123		23/11/2023 08:37 AM	WATER	ALS:4 Non ALS:0	No	X	
048	0908_MMV232D_231124		24/11/2023 07:54 AM	WATER	ALS:4 Non ALS:0	No	X	
048	0908_MMV232S_231124		24/11/2023 07:51 AM	WATER	ALS:4 Non ALS:0	No	X	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: 0908\_Blanrnual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

SAMPLER MOBILE:  
 Random Sample Temperature on Receipt: C

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
050	0908_MMW240D_231122		22/11/2023 01:45 PM	WATER	ALS: 4 Non ALS: 0	No	X	
051	0908_MMW241D_231123		23/11/2023 08:45 AM	WATER	ALS: 4 Non ALS: 0	No	X	
052	0908_MMW241S_231123		23/11/2023 09:17 AM	WATER	ALS: 4 Non ALS: 0	No	X	
053	0908_MMW244D_231122		22/11/2023 08:32 AM	WATER	ALS: 4 Non ALS: 0	No	X	
054	0908_MMW244S_231122		22/11/2023 08:34 AM	WATER	ALS: 4 Non ALS: 0	No	X	
055	0908_MMW247D_231124		24/11/2023 11:21 AM	WATER	ALS: 4 Non ALS: 0	No	X	
056	0908_MMW247S_231124		24/11/2023 11:15 AM	WATER	ALS: 4 Non ALS: 0	No	X	

**CHAIN OF CUSTODY**

COC#: 60092

ALS Laboratory: ES Sydney  
Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

**RELINQUISHED BY:**  
DATE TIME:**RECEIVED BY:**  
DATE TIME:**RELINQUISHED BY:**  
DATE TIME:**RECEIVED BY:**  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**Custody Seal Intact? Yes No N/A  
Free Ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE DETAILS				ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
057	0908_MMV256D_231121		21/11/2023 01:30 PM	WATER	ALS: 4 Non ALS: 0	No	X		
058	0908_MMV256S_231121		21/11/2023 01:31 PM	WATER	ALS: 4 Non ALS: 0	No	X		
059	0908_MMV257D_231121		21/11/2023 01:59 PM	WATER	ALS: 4 Non ALS: 0	No	X		
060	0908_MMV257S_231121		21/11/2023 01:59 PM	WATER	ALS: 4 Non ALS: 0	No	X		
061	0908_MMV258D_231120		20/11/2023 01:32 PM	WATER	ALS: 4 Non ALS: 0	No	X		
062	0908_MMV258S_231120		20/11/2023 01:42 PM	WATER	ALS: 4 Non ALS: 0	No	X		
063	0908_MMV280D_231121		21/11/2023 02:44 PM	WATER	ALS: 4 Non ALS: 0	No	X		

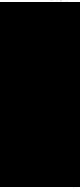
CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASSOMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
064	0908_MMW260S_231121		21/11/2023 02:37 PM	WATER	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
065	0908_MMW263D_231120		20/11/2023 01:00 PM	WATER	ALS: 4 Non ALS: 0	No	X	
066	0908_MMW263S_231120		20/11/2023 12:58 PM	WATER	ALS: 4 Non ALS: 0	No	X	
067	0908_MMW278D_231121		21/11/2023 03:30 PM	WATER	ALS: 4 Non ALS: 0	No	X	
068	0908_MMW278S_231121		21/11/2023 03:32 PM	WATER	ALS: 4 Non ALS: 0	No	X	
069	0908_MMW279S_231121		21/11/2023 01:37 PM	WATER	ALS: 4 Non ALS: 0	No	X	
070	0908_MMW280S_231123		23/11/2023 09:38 AM	WATER	ALS: 4 Non ALS: 0	No	X	



# CHAIN OF CUSTODY

COC#: 60092

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
QUOTE NO: SY1139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

SAMPLER MOBILE:

**LABORATORY USE ONLY (Circle)**  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
071	0908_MMW281S_231122		22/11/2023 01:48 PM	WATER	ALS: 4 Non ALS: 0	No	X		
072	0908_MMW282S_231122		22/11/2023 01:41 PM	WATER	ALS: 4 Non ALS: 0	No	X		
073	0908_MMW316D_231123		23/11/2023 11:20 AM	WATER	ALS: 4 Non ALS: 0	No	X		
074	0908_MMW315S_231123		23/11/2023 11:18 AM	WATER	ALS: 4 Non ALS: 0	No	X		
075	0908_MMW316D_231121		21/11/2023 12:20 PM	WATER	ALS: 4 Non ALS: 0	No	X		
076	0908_MMW318D_231123		23/11/2023 01:26 PM	WATER	ALS: 4 Non ALS: 0	No	X		
077	0908_MMW318S_231123		23/11/2023 01:33 PM	WATER	ALS: 4 Non ALS: 0	No	X		



# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney Environmental

COC#: 60092

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5COMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

### SAMPLE DETAILS

### ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
078	0908_MMW433_231123		23/11/2023 09:32 AM	WATER	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
079	0908_MMW466_231122		22/11/2023 02:24 PM	WATER	ALS: 4 Non ALS: 0	No	X	
080	0908_MMW468_231122		22/11/2023 02:34 PM	WATER	ALS: 4 Non ALS: 0	No	X	
081	0908_MMW329_231123		23/11/2023 01:02 PM	WATER	ALS: 4 Non ALS: 0	No	X	
082	0908_QC100_231121		21/11/2023 10:05 AM	WATER	ALS: 4 Non ALS: 0	No	X	
083	0908_QC101_231121		21/11/2023 02:07 PM	WATER	ALS: 4 Non ALS: 0	No	X	
084	0908_QC103_231123		23/11/2023 01:59 PM	WATER	ALS: 4 Non ALS: 0	No	X	

**CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney Environmental

COC#: 60092

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]

PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

**RELINQUISHED BY:**  
DATE TIME:**RECEIVED BY:**  
DATE TIME:**RELINQUISHED BY:**  
DATE TIME:**RECEIVED BY:**  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**Custody Seal Intact? Yes No N/A  
Free Ice / Frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
085	0908_QC105_2311		23/11/2023 02:23 PM	WATER	ALS:4 Non ALS:0	No	X	
086	0908_QC106_231122		22/11/2023 10:56 AM	WATER	ALS:4 Non ALS:0	No	X	
087	0908_QC107_231127		27/11/2023 12:23 PM	WATER	ALS:4 Non ALS:0	No	X	
088	0908_QC109_2311		27/11/2023 12:24 PM	WATER	ALS:4 Non ALS:0	No	X	
089	0908_QC112_231123		23/11/2023 09:15 AM	WATER	ALS:4 Non ALS:0	No	X	
090	0908_QC114_2311298		28/11/2023 10:09 AM	WATER	ALS:4 Non ALS:0	No	X	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER:

CONTACT PH: SAMPLER MOBILE:  
 QUOTE NO: SY139/19 v4 60612662\_2.1 / ES2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_MMV108D_231123	HDPE (no PTFE)	20 mL	00352309050234	Grey	No	
001	0908_MMV106D_231123	HDPE (no PTFE)	20 mL	00352309041567	Grey	No	
001	0908_MMV108D_231123	HDPE (no PTFE)	20 mL	00352309041772	Grey	No	
001	0908_MMV108D_231123	HDPE (no PTFE)	20 mL	00352309050176	Grey	No	
002	0908_MMV106S_231123	HDPE (no PTFE)	20 mL	00352309050293	Grey	No	
002	0908_MMV106S_231123	HDPE (no PTFE)	20 mL	00352309050143	Grey	No	
002	0908_MMV106S_231123	HDPE (no PTFE)	20 mL	00352309041743	Grey	No	
002	0908_MMV106S_231123	HDPE (no PTFE)	20 mL	00352309041790	Grey	No	
003	0908_MMV107D_231123	HDPE (no PTFE)	20 mL	00352309042805	Grey	No	
003	0908_MMV107D_231123	HDPE (no PTFE)	20 mL	00352309042793	Grey	No	
003	0908_MMV107D_231123	HDPE (no PTFE)	20 mL	00352309042806	Grey	No	
003	0908_MMV107D_231123	HDPE (no PTFE)	20 mL	00352309049762	Grey	No	
004	0908_MMV107S_231123	HDPE (no PTFE)	20 mL	00352309049628	Grey	No	
004	0908_MMV107S_231123	HDPE (no PTFE)	20 mL	00352309042771	Grey	No	
004	0908_MMV107S_231123	HDPE (no PTFE)	20 mL	00352309049607	Grey	No	
004	0908_MMV107S_231123	HDPE (no PTFE)	20 mL	00352309042784	Grey	No	
005	0908_MMV108D_231122	HDPE (no PTFE)	20 mL	00350822059775	Grey	No	
005	0908_MMV108D_231122	HDPE (no PTFE)	20 mL	00350822059683	Grey	No	
005	0908_MMV108D_231122	HDPE (no PTFE)	20 mL	00350822059489	Grey	No	
005	0908_MMV108D_231122	HDPE (no PTFE)	20 mL	00350822059372	Grey	No	
006	0908_MMV108S_231122	HDPE (no PTFE)	20 mL	00352309050075	Grey	No	
006	0908_MMV108S_231122	HDPE (no PTFE)	20 mL	00352309050277	Grey	No	
006	0908_MMV108S_231122	HDPE (no PTFE)	20 mL	00352309050149	Grey	No	
006	0908_MMV108S_231122	HDPE (no PTFE)	20 mL	00352309050116	Grey	No	
007	0908_MMV109D_231122	HDPE (no PTFE)	20 mL	00352309042739	Grey	No	
007	0908_MMV109D_231122	HDPE (no PTFE)	20 mL	00352309042817	Grey	No	

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen Ice Bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**CHAIN OF CUSTODY**

ALS COC#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE:

4

Other comments:

C

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)	
Biohazard Info:		Custody Seal Intact? Yes No N/A	
		Free ice / Frozen ice bricks present upon receipt? Yes No N/A	
		Random Sample Temperature on Receipt: C	

ID	DESCRIPTION	DATE TIME	VOLUME	ANALYST	STATUS	REMARKS
007	0908_MM109D_231122	HDPE (no PTFE)	20 mL	00352309049769	Grey	No
007	0908_MM109D_231122	HDPE (no PTFE)	20 mL	00352309049601	Grey	No
008	0908_MM118_231128	HDPE (no PTFE)	20 mL	00352309049656	Grey	No
008	0908_MM118_231128	HDPE (no PTFE)	20 mL	00352309049671	Grey	No
008	0908_MM118_231128	HDPE (no PTFE)	20 mL	00352309049594	Grey	No
008	0908_MM118_231128	HDPE (no PTFE)	20 mL	00352309049499	Grey	No
009	0908_MM121_231120	HDPE (no PTFE)	20 mL	00350822036204	Grey	No
009	0908_MM121_231120	HDPE (no PTFE)	20 mL	00350822059468	Grey	No
009	0908_MM121_231120	HDPE (no PTFE)	20 mL	00350822036187	Grey	No
009	0908_MM121_231120	HDPE (no PTFE)	20 mL	00350822059917	Grey	No
010	0908_MM122_231121	HDPE (no PTFE)	20 mL	00350822059445	Grey	No
010	0908_MM122_231121	HDPE (no PTFE)	20 mL	00350822056260	Grey	No
010	0908_MM122_231121	HDPE (no PTFE)	20 mL	00350822059890	Grey	No
011	0908_MM123_231121	HDPE (no PTFE)	20 mL	00350822063065	Grey	No
011	0908_MM123_231121	HDPE (no PTFE)	20 mL	00350822063122	Grey	No
011	0908_MM123_231121	HDPE (no PTFE)	20 mL	00350822059813	Grey	No
011	0908_MM123_231121	HDPE (no PTFE)	20 mL	00350822036213	Grey	No
012	0908_MM124_231121	HDPE (no PTFE)	20 mL	00350822036018	Grey	No
012	0908_MM124_231121	HDPE (no PTFE)	20 mL	00350822059587	Grey	No
012	0908_MM124_231121	HDPE (no PTFE)	20 mL	00350822059768	Grey	No
012	0908_MM124_231121	HDPE (no PTFE)	20 mL	00350822059726	Grey	No
013	0908_MM125D_231121	HDPE (no PTFE)	20 mL	00350822059754	Grey	No
013	0908_MM125D_231121	HDPE (no PTFE)	20 mL	00350822059976	Grey	No
013	0908_MM125D_231121	HDPE (no PTFE)	20 mL	00350822059800	Grey	No
014	0908_MM125S_231121	HDPE (no PTFE)	20 mL	00350822059733	Grey	No

**CHAIN OF CUSTODY**

ALS COC#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE:  
Random Sample Temperature on Receipt:  
Other comments:

Yes No N/A  
Yes No N/A  
C

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

ID	DESCRIPTION	HDPE (no PTFE)	20 mL	00350822059440	Grey	No	No
014	0908_MM129S_231121	HDPE (no PTFE)	20 mL	00350822059440	Grey	No	No
014	0908_MM129S_231121	HDPE (no PTFE)	20 mL	00350822059440	Grey	No	No
014	0908_MM129S_231121	HDPE (no PTFE)	20 mL	00350822059440	Grey	No	No
015	0908_MM129D_231123	HDPE (no PTFE)	20 mL	00352309041635	Grey	No	No
015	0908_MM129D_231123	HDPE (no PTFE)	20 mL	00352309041635	Grey	No	No
015	0908_MM129D_231123	HDPE (no PTFE)	20 mL	00352309041635	Grey	No	No
015	0908_MM129D_231123	HDPE (no PTFE)	20 mL	00352309041635	Grey	No	No
016	0908_MM129S_231123	HDPE (no PTFE)	20 mL	00352309041828	Grey	No	No
016	0908_MM129S_231123	HDPE (no PTFE)	20 mL	00352309041828	Grey	No	No
016	0908_MM129S_231123	HDPE (no PTFE)	20 mL	00352309041828	Grey	No	No
016	0908_MM129S_231123	HDPE (no PTFE)	20 mL	00352309041745	Grey	No	No
016	0908_MM129S_231123	HDPE (no PTFE)	20 mL	00352309041750	Grey	No	No
017	0908_MM129D_231128	HDPE (no PTFE)	20 mL	00352101040630	Grey	No	No
017	0908_MM129D_231128	HDPE (no PTFE)	20 mL	00350822059494	Grey	No	No
017	0908_MM129D_231128	HDPE (no PTFE)	20 mL	00352101060018	Grey	No	No
017	0908_MM129D_231128	HDPE (no PTFE)	20 mL	003508220594177	Grey	No	No
018	0908_MM129S_231128	HDPE (no PTFE)	20 mL	00350821042703	Grey	No	No
018	0908_MM129S_231128	HDPE (no PTFE)	20 mL	00350821042903	Grey	No	No
018	0908_MM129S_231128	HDPE (no PTFE)	20 mL	00352101040722	Grey	No	No
018	0908_MM129S_231128	HDPE (no PTFE)	20 mL	00352101040596	Grey	No	No
019	0908_MM130D_231127	HDPE (no PTFE)	20 mL	00352309049678	Grey	No	No
019	0908_MM130D_231127	HDPE (no PTFE)	20 mL	00352309049676	Grey	No	No
019	0908_MM130D_231127	HDPE (no PTFE)	20 mL	00352309042795	Grey	No	No
019	0908_MM130D_231127	HDPE (no PTFE)	20 mL	00352309049772	Grey	No	No
020	0908_MM130S_231127	HDPE (no PTFE)	20 mL	00352309049721	Grey	No	No
020	0908_MM130S_231127	HDPE (no PTFE)	20 mL	00352309049580	Grey	No	No
020	0908_MM130S_231127	HDPE (no PTFE)	20 mL	00352309049617	Grey	No	No
020	0908_MM130S_231127	HDPE (no PTFE)	20 mL	00352309042813	Grey	No	No



# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney Environmental

COG#: 60092

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER:



CONTACT PH:

SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

Other comments:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact?  
Free ice / frozen ice bricks present upon receipt?  
Random Sample Temperature on Receipt:

Yes No N/A  
Yes No N/A  
C

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
021	0908_MW132D_231123	HDPPE (no PTFEE)	20 mL	00352309042839	Grey	No	
021	0908_MW132D_231123	HDPPE (no PTFEE)	20 mL	00352309042787	Grey	No	
021	0908_MW132D_231123	HDPPE (no PTFEE)	20 mL	00352309042744	Grey	No	
021	0908_MW132D_231123	HDPPE (no PTFEE)	20 mL	00352309042827	Grey	No	
022	0908_MW132S_231123	HDPPE (no PTFEE)	20 mL	00352309049668	Grey	No	
022	0908_MW132S_231123	HDPPE (no PTFEE)	20 mL	00352309042792	Grey	No	
022	0908_MW132S_231123	HDPPE (no PTFEE)	20 mL	00352309049730	Grey	No	
022	0908_MW132S_231123	HDPPE (no PTFEE)	20 mL	00352309049609	Grey	No	
023	0908_MW134D_231122	HDPPE (no PTFEE)	20 mL	00352309042842	Grey	No	
023	0908_MW134D_231122	HDPPE (no PTFEE)	20 mL	00352309042796	Grey	No	
023	0908_MW134D_231122	HDPPE (no PTFEE)	20 mL	00352309042789	Grey	No	
023	0908_MW134D_231122	HDPPE (no PTFEE)	20 mL	00352309049756	Grey	No	
024	0908_MW134I_231122	HDPPE (no PTFEE)	20 mL	00352309042770	Grey	No	
024	0908_MW134I_231122	HDPPE (no PTFEE)	20 mL	00352309049618	Grey	No	
024	0908_MW134I_231122	HDPPE (no PTFEE)	20 mL	00352309049773	Grey	No	
024	0908_MW134I_231122	HDPPE (no PTFEE)	20 mL	00352309042798	Grey	No	
025	0908_MW146AD_231123	HDPPE (no PTFEE)	20 mL	00352309041823	Grey	No	
025	0908_MW146AD_231123	HDPPE (no PTFEE)	20 mL	00352309050361	Grey	No	
025	0908_MW146AD_231123	HDPPE (no PTFEE)	20 mL	00352309050106	Grey	No	
025	0908_MW146AD_231123	HDPPE (no PTFEE)	20 mL	00352309041742	Grey	No	
026	0908_MW146S_231124	HDPPE (no PTFEE)	20 mL	00352309049663	Grey	No	
026	0908_MW146S_231124	HDPPE (no PTFEE)	20 mL	00352309049639	Grey	No	
026	0908_MW146S_231124	HDPPE (no PTFEE)	20 mL	00352309049739	Grey	No	
027	0908_MW156D_231123	HDPPE (no PTFEE)	20 mL	00352309041769	Grey	No	
027	0908_MW156D_231123	HDPPE (no PTFEE)	20 mL	00352309050078	Grey	No	
027	0908_MW156D_231123	HDPPE (no PTFEE)	20 mL	00352309050252	Grey	No	



# CHAIN OF CUSTODY

ALS COC#: 60092 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:



CONTACT PH: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLER MOBILE: [REDACTED]  
Other comments:

Random Sample Temperature on Receipt: °C

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

### LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Yes No N/A

Free ice / Frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

EMAIL INVOICES TO:

QTY	DESCRIPTION	HDPE (no PTFE)	20 mL	00352309041716	Grey	No	
027	0908_MW156D_231123	HDPE (no PTFE)	20 mL	00352309041716	Grey	No	
028	0908_MW160_231123	HDPE (no PTFE)	20 mL	00352309042834	Grey	No	
028	0908_MW160_231123	HDPE (no PTFE)	20 mL	00352309042816	Grey	No	
028	0908_MW160_231123	HDPE (no PTFE)	20 mL	00352309049657	Grey	No	
028	0908_MW160_231123	HDPE (no PTFE)	20 mL	00352309049611	Grey	No	
029	0908_MW162D_231121	HDPE (no PTFE)	20 mL	00350822058478	Grey	No	
029	0908_MW162D_231121	HDPE (no PTFE)	20 mL	00350822059889	Grey	No	
029	0908_MW162D_231121	HDPE (no PTFE)	20 mL	00350822059614	Grey	No	
029	0908_MW162D_231121	HDPE (no PTFE)	20 mL	00350822059619	Grey	No	
030	0908_MW162S_231121	HDPE (no PTFE)	20 mL	00350822036150	Grey	No	
030	0908_MW162S_231121	HDPE (no PTFE)	20 mL	00350822036031	Grey	No	
030	0908_MW162S_231121	HDPE (no PTFE)	20 mL	00350822036076	Grey	No	
030	0908_MW162S_231121	HDPE (no PTFE)	20 mL	00350822059744	Grey	No	
031	0908_MW163_231128	HDPE (no PTFE)	20 mL	00350822058869	Grey	No	
031	0908_MW163_231128	HDPE (no PTFE)	20 mL	00350822058789	Grey	No	
031	0908_MW163_231128	HDPE (no PTFE)	20 mL	00352101060024	Grey	No	
031	0908_MW163_231128	HDPE (no PTFE)	20 mL	00352309049701	Grey	No	
031	0908_MW163_231128	HDPE (no PTFE)	20 mL	00352309050309	Grey	No	
032	0908_MW166_231122	HDPE (no PTFE)	20 mL	00352309050150	Grey	No	
032	0908_MW166_231122	HDPE (no PTFE)	20 mL	00352309050090	Grey	No	
032	0908_MW166_231122	HDPE (no PTFE)	20 mL	00352309050117	Grey	No	
033	0908_MW167_231122	HDPE (no PTFE)	20 mL	00352309050118	Grey	No	
033	0908_MW167_231122	HDPE (no PTFE)	20 mL	00352309050123	Grey	No	
033	0908_MW167_231122	HDPE (no PTFE)	20 mL	00352309050199	Grey	No	
033	0908_MW167_231122	HDPE (no PTFE)	20 mL	00352309050263	Grey	No	
034	0908_MW168_231122	HDPE (no PTFE)	20 mL	00352309050303	Grey	No	
034	0908_MW168_231122	HDPE (no PTFE)	20 mL	00352309050364	Grey	No	



# CHAIN OF CUSTODY

COC#: 60092

ALS Laboratory: ES Sydney  
Environmental

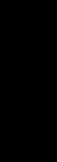
CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER



EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

Other comments:

### LABORATORY USE ONLY (Circle)

Custody Seal intact?

Free ice / frozen ice bricks present upon receipt?

Random Sample Temperature on Receipt:

Yes No N/A  
Yes No N/A  
C

034	0908_MMV168_231122	HDPE (no PTFE)	20 mL	00352309050194	Grey	No	
034	0908_MMV168_231122	HDPE (no PTFE)	20 mL	00352309050108	Grey	No	
035	0908_MMV169D_231122	HDPE (no PTFE)	20 mL	00352309050081	Grey	No	
035	0908_MMV169D_231122	HDPE (no PTFE)	20 mL	00352309050333	Grey	No	
035	0908_MMV169D_231122	HDPE (no PTFE)	20 mL	00352309050098	Grey	No	
035	0908_MMV169D_231122	HDPE (no PTFE)	20 mL	00352309050363	Grey	No	
036	0908_MMV169S_231122	HDPE (no PTFE)	20 mL	00352309050185	Grey	No	
036	0908_MMV169S_231122	HDPE (no PTFE)	20 mL	00352309050327	Grey	No	
036	0908_MMV169S_231122	HDPE (no PTFE)	20 mL	00352309050329	Grey	No	
036	0908_MMV169S_231122	HDPE (no PTFE)	20 mL	00352309050221	Grey	No	
037	0908_MMV172_231122	HDPE (no PTFE)	20 mL	00352309050170	Grey	No	
037	0908_MMV172_231122	HDPE (no PTFE)	20 mL	00352309050240	Grey	No	
037	0908_MMV172_231122	HDPE (no PTFE)	20 mL	00352309050330	Grey	No	
037	0908_MMV172_231122	HDPE (no PTFE)	20 mL	00350822059579	Grey	No	
038	0908_MMV175D_231122	HDPE (no PTFE)	20 mL	00350822059819	Grey	No	
038	0908_MMV175D_231122	HDPE (no PTFE)	20 mL	00352309050367	Grey	No	
038	0908_MMV175D_231122	HDPE (no PTFE)	20 mL	00352309050227	Grey	No	
038	0908_MMV175D_231122	HDPE (no PTFE)	20 mL	00350822059612	Grey	No	
039	0908_MMV178_231121	HDPE (no PTFE)	20 mL	00350822036245	Grey	No	
039	0908_MMV178_231121	HDPE (no PTFE)	20 mL	00350822059844	Grey	No	
039	0908_MMV178_231121	HDPE (no PTFE)	20 mL	00350822036047	Grey	No	
040	0908_MMV179D_231122	HDPE (no PTFE)	20 mL	00352309049642	Grey	No	
040	0908_MMV179D_231122	HDPE (no PTFE)	20 mL	00352309049743	Grey	No	
040	0908_MMV179D_231122	HDPE (no PTFE)	20 mL	00352309049673	Grey	No	
040	0908_MMV179D_231122	HDPE (no PTFE)	20 mL	00352309042777	Grey	No	
041	0908_MMV179S_231122	HDPE (no PTFE)	20 mL	00352309042754	Grey	No	
041	0908_MMV179S_231122	HDPE (no PTFE)	20 mL	00352309042751	Grey	No	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
 PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

SAMPLER MOBILE:

Biohazard info:

TURNAROUND REQUIREMENTS: 5 Days

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

ID	Sample ID	Material	Volume	Barcode	Color	Seal Intact?	Temp on Receipt	Freeze Bricks?
041	0908_MMV179S_231122	HDPE (no PTFE)	20 mL	00352309042768	Grey	No		
041	0908_MMV179S_231122	HDPE (no PTFE)	20 mL	00352309049641	Grey	No		
042	0908_MMV196_231122	HDPE (no PTFE)	20 mL	00352309050164	Grey	No		
042	0908_MMV196_231122	HDPE (no PTFE)	20 mL	00352309050092	Grey	No		
042	0908_MMV196_231122	HDPE (no PTFE)	20 mL	00352309050152	Grey	No		
042	0908_MMV196_231122	HDPE (no PTFE)	20 mL	00352309050155	Grey	No		
043	0908_MMV198_231122	HDPE (no PTFE)	20 mL	00352309049718	Grey	No		
043	0908_MMV198_231122	HDPE (no PTFE)	20 mL	00352309049697	Grey	No		
043	0908_MMV198_231122	HDPE (no PTFE)	20 mL	00352309049768	Grey	No		
043	0908_MMV198_231122	HDPE (no PTFE)	20 mL	00352309049592	Grey	No		
044	0908_MMV202D_231122	HDPE (no PTFE)	20 mL	00352309049784	Grey	No		
044	0908_MMV202D_231122	HDPE (no PTFE)	20 mL	00352309049667	Grey	No		
044	0908_MMV202D_231122	HDPE (no PTFE)	20 mL	00352309049595	Grey	No		
044	0908_MMV202D_231122	HDPE (no PTFE)	20 mL	00352309049645	Grey	No		
045	0908_MMV202S_231122	HDPE (no PTFE)	20 mL	00352309042822	Grey	No		
045	0908_MMV202S_231122	HDPE (no PTFE)	20 mL	00352309049691	Grey	No		
045	0908_MMV202S_231122	HDPE (no PTFE)	20 mL	00352309049680	Grey	No		
045	0908_MMV202S_231122	HDPE (no PTFE)	20 mL	00352309049598	Grey	No		
046	0908_MMV208_231123	HDPE (no PTFE)	20 mL	00352309041697	Grey	No		
046	0908_MMV208_231123	HDPE (no PTFE)	20 mL	00352309041689	Grey	No		
046	0908_MMV208_231123	HDPE (no PTFE)	20 mL	00352309041701	Grey	No		
046	0908_MMV208_231123	HDPE (no PTFE)	20 mL	00352309041666	Grey	No		
047	0908_MMV212_231123	HDPE (no PTFE)	20 mL	00352309041761	Grey	No		
047	0908_MMV212_231123	HDPE (no PTFE)	20 mL	00352309050163	Grey	No		
047	0908_MMV212_231123	HDPE (no PTFE)	20 mL	00352309050219	Grey	No		
048	0908_MMV232D_231124	HDPE (no PTFE)	20 mL	00352309048719	Grey	No		
048	0908_MMV232D_231124	HDPE (no PTFE)	20 mL	00352309049613	Grey	No		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact?   
 Free Ice / Frozen Ice Bricks present upon receipt?   
 Random Sample Temperature on Receipt:   
 Other comments:

Yes No N/A  
 Yes No N/A  
 C

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

ID	Sample ID	Matrix	Volume	Barcode	Color	Intact?	Temp?
048	0908_MW232D_231124	HDPE (no PTFE)	20 mL	00352309049638	Grey	No	
048	0908_MW232D_231124	HDPE (no PTFE)	20 mL	00352309042821	Grey	No	
049	0908_MW232S_231124	HDPE (no PTFE)	20 mL	00352309049686	Grey	No	
049	0908_MW232S_231124	HDPE (no PTFE)	20 mL	00352309049692	Grey	No	
049	0908_MW232S_231124	HDPE (no PTFE)	20 mL	00352309049708	Grey	No	
049	0908_MW232S_231124	HDPE (no PTFE)	20 mL	00352309049636	Grey	No	
050	0908_MW240D_231122	HDPE (no PTFE)	20 mL	00352309049861	Grey	No	
050	0908_MW240D_231122	HDPE (no PTFE)	20 mL	00352309049757	Grey	No	
050	0908_MW240D_231122	HDPE (no PTFE)	20 mL	00352309042785	Grey	No	
050	0908_MW240D_231122	HDPE (no PTFE)	20 mL	00352309049698	Grey	No	
051	0908_MW241D_231123	HDPE (no PTFE)	20 mL	00352309042772	Grey	No	
051	0908_MW241D_231123	HDPE (no PTFE)	20 mL	00352309049746	Grey	No	
051	0908_MW241D_231123	HDPE (no PTFE)	20 mL	00352309049734	Grey	No	
051	0908_MW241D_231123	HDPE (no PTFE)	20 mL	00352309049643	Grey	No	
052	0908_MW241S_231123	HDPE (no PTFE)	20 mL	00352309042812	Grey	No	
052	0908_MW241S_231123	HDPE (no PTFE)	20 mL	00352309049612	Grey	No	
052	0908_MW241S_231123	HDPE (no PTFE)	20 mL	00352309049759	Grey	No	
052	0908_MW241S_231123	HDPE (no PTFE)	20 mL	00352309049722	Grey	No	
053	0908_MW244D_231122	HDPE (no PTFE)	20 mL	00352309050204	Grey	No	
053	0908_MW244D_231122	HDPE (no PTFE)	20 mL	00352309050371	Grey	No	
053	0908_MW244D_231122	HDPE (no PTFE)	20 mL	00352309050119	Grey	No	
053	0908_MW244D_231122	HDPE (no PTFE)	20 mL	00352309050332	Grey	No	
054	0908_MW244S_231122	HDPE (no PTFE)	20 mL	00352309049703	Grey	No	
054	0908_MW244S_231122	HDPE (no PTFE)	20 mL	00352309042742	Grey	No	
054	0908_MW244S_231122	HDPE (no PTFE)	20 mL	00352309049586	Grey	No	
054	0908_MW244S_231122	HDPE (no PTFE)	20 mL	00352309042745	Grey	No	
055	0908_MW247D_231124	HDPE (no PTFE)	20 mL	00352309041549	Grey	No	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612662\_2.1 / ES2021AECOMAU002

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen Ice Bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
TURNAROUND REQUIREMENTS: 5 Days							
Biohazard Info:							
055	0908_MW247D_231124	HDPPE (no PTFE)	20 mL	00352309050210	Grey	No	
055	0908_MW247D_231124	HDPPE (no PTFE)	20 mL	00352309050235	Grey	No	
055	0908_MW247D_231124	HDPPE (no PTFE)	20 mL	00352309041538	Grey	No	
056	0908_MW247S_231124	HDPPE (no PTFE)	20 mL	00352309050206	Grey	No	
056	0908_MW247S_231124	HDPPE (no PTFE)	20 mL	00352309050134	Grey	No	
056	0908_MW247S_231124	HDPPE (no PTFE)	20 mL	00352309050109	Grey	No	
056	0908_MW247S_231124	HDPPE (no PTFE)	20 mL	00352309050305	Grey	No	
057	0908_MW256D_231121	HDPPE (no PTFE)	20 mL	00350621008836	Grey	No	
057	0908_MW256D_231121	HDPPE (no PTFE)	20 mL	00350822059862	Grey	No	
057	0908_MW256D_231121	HDPPE (no PTFE)	20 mL	00350621008924	Grey	No	
057	0908_MW256D_231121	HDPPE (no PTFE)	20 mL	00350822059756	Grey	No	
058	0908_MW256S_231121	HDPPE (no PTFE)	20 mL	00352101040353	Grey	No	
058	0908_MW256S_231121	HDPPE (no PTFE)	20 mL	00350822062989	Grey	No	
058	0908_MW256S_231121	HDPPE (no PTFE)	20 mL	00352101040446	Grey	No	
058	0908_MW256S_231121	HDPPE (no PTFE)	20 mL	00350822062993	Grey	No	
059	0908_MW257D_231121	HDPPE (no PTFE)	20 mL	00350621001590	Grey	No	
059	0908_MW257D_231121	HDPPE (no PTFE)	20 mL	00350822063117	Grey	No	
059	0908_MW257D_231121	HDPPE (no PTFE)	20 mL	00350822063140	Grey	No	
059	0908_MW257D_231121	HDPPE (no PTFE)	20 mL	00350621001420	Grey	No	
060	0908_MW257S_231121	HDPPE (no PTFE)	20 mL	00350822063621	Grey	No	
060	0908_MW257S_231121	HDPPE (no PTFE)	20 mL	00350621008936	Grey	No	
060	0908_MW257S_231121	HDPPE (no PTFE)	20 mL	00350621008900	Grey	No	
060	0908_MW257S_231121	HDPPE (no PTFE)	20 mL	00350822063640	Grey	No	
061	0908_MW258D_231120	HDPPE (no PTFE)	20 mL	00350822059982	Grey	No	
061	0908_MW258D_231120	HDPPE (no PTFE)	20 mL	00350822059657	Grey	No	
061	0908_MW258D_231120	HDPPE (no PTFE)	20 mL	00350822036239	Grey	No	
061	0908_MW258D_231120	HDPPE (no PTFE)	20 mL	00350822059677	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:  
 EMAIL INVOICES TO:

CONTACT PH:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

DATE TIME:

DATE TIME:

DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No  
 Free Ice / frozen ice bricks present upon receipt? Yes No  
 Random Sample Temperature on Receipt: C  
 Other comments:

DATE TIME:

062	0908_MMW258S_231120	HDPE (no PTFE)	20 mL	00350822059429	Grey	No	
062	0908_MMW258S_231120	HDPE (no PTFE)	20 mL	00350822059986	Grey	No	
062	0908_MMW258S_231120	HDPE (no PTFE)	20 mL	00350822059407	Grey	No	
062	0908_MMW258S_231120	HDPE (no PTFE)	20 mL	00350822059427	Grey	No	
063	0908_MMW260D_231121	HDPE (no PTFE)	20 mL	00352309042799	Grey	No	
063	0908_MMW260D_231121	HDPE (no PTFE)	20 mL	00352309042797	Grey	No	
063	0908_MMW260D_231121	HDPE (no PTFE)	20 mL	00352309049623	Grey	No	
063	0908_MMW260D_231121	HDPE (no PTFE)	20 mL	00352309042760	Grey	No	
064	0908_MMW260S_231121	HDPE (no PTFE)	20 mL	00350822063269	Grey	No	
064	0908_MMW260S_231121	HDPE (no PTFE)	20 mL	00350621036572	Grey	No	
064	0908_MMW260S_231121	HDPE (no PTFE)	20 mL	00350822063136	Grey	No	
064	0908_MMW260S_231121	HDPE (no PTFE)	20 mL	00350621037003	Grey	No	
065	0908_MMW263D_231120	HDPE (no PTFE)	20 mL	00350822036218	Grey	No	
065	0908_MMW263D_231120	HDPE (no PTFE)	20 mL	00350822059885	Grey	No	
065	0908_MMW263D_231120	HDPE (no PTFE)	20 mL	00350822036001	Grey	No	
065	0908_MMW263D_231120	HDPE (no PTFE)	20 mL	00350822056244	Grey	No	
066	0908_MMW263S_231120	HDPE (no PTFE)	20 mL	00350822059753	Grey	No	
066	0908_MMW263S_231120	HDPE (no PTFE)	20 mL	00350822059776	Grey	No	
066	0908_MMW263S_231120	HDPE (no PTFE)	20 mL	00350822059899	Grey	No	
066	0908_MMW263S_231120	HDPE (no PTFE)	20 mL	00350822059613	Grey	No	
067	0908_MMW278D_231121	HDPE (no PTFE)	20 mL	00352309042788	Grey	No	
067	0908_MMW278D_231121	HDPE (no PTFE)	20 mL	00352309042801	Grey	No	
067	0908_MMW278D_231121	HDPE (no PTFE)	20 mL	00352309049655	Grey	No	
067	0908_MMW278D_231121	HDPE (no PTFE)	20 mL	00352309042740	Grey	No	
068	0908_MMW278S_231121	HDPE (no PTFE)	20 mL	00352309042755	Grey	No	
068	0908_MMW278S_231121	HDPE (no PTFE)	20 mL	00352309042767	Grey	No	
068	0908_MMW278S_231121	HDPE (no PTFE)	20 mL	00352309042848	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE:  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

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**LABORATORY USE ONLY (Circle)**  
 Custody Seal intact?  
 Free ice / frozen ice bricks present upon receipt?  
 Random Sample Temperature on Receipt:  
 Other comments:

Yes No N/A  
 Yes No N/A  
 °C

068	0908_MM278S_231121	HDPE (no PTFE)	20 mL	00352309049745	Grey	No	
069	0908_MM279S_231121	HDPE (no PTFE)	20 mL	00350822059378	Grey	No	
069	0908_MM279S_231121	HDPE (no PTFE)	20 mL	00350822059389	Grey	No	
069	0908_MM279S_231121	HDPE (no PTFE)	20 mL	00350822059638	Grey	No	
069	0908_MM279S_231121	HDPE (no PTFE)	20 mL	00350822059533	Grey	No	
070	0908_MM280S_231123	HDPE (no PTFE)	20 mL	00352309042818	Grey	No	
070	0908_MM280S_231123	HDPE (no PTFE)	20 mL	00352309049679	Grey	No	
070	0908_MM280S_231123	HDPE (no PTFE)	20 mL	00352309042737	Grey	No	
070	0908_MM280S_231123	HDPE (no PTFE)	20 mL	00352309042794	Grey	No	
071	0908_MM281S_231122	HDPE (no PTFE)	20 mL	00352309050169	Grey	No	
071	0908_MM281S_231122	HDPE (no PTFE)	20 mL	00352309050349	Grey	No	
071	0908_MM281S_231122	HDPE (no PTFE)	20 mL	00352309050079	Grey	No	
071	0908_MM281S_231122	HDPE (no PTFE)	20 mL	00352309050301	Grey	No	
072	0908_MM282S_231122	HDPE (no PTFE)	20 mL	00352309050186	Grey	No	
072	0908_MM282S_231122	HDPE (no PTFE)	20 mL	00352309050129	Grey	No	
072	0908_MM282S_231122	HDPE (no PTFE)	20 mL	00352309050242	Grey	No	
072	0908_MM282S_231122	HDPE (no PTFE)	20 mL	00352309050196	Grey	No	
073	0908_MM315D_231123	HDPE (no PTFE)	20 mL	00352309049750	Grey	No	
073	0908_MM315D_231123	HDPE (no PTFE)	20 mL	00352309049670	Grey	No	
073	0908_MM315D_231123	HDPE (no PTFE)	20 mL	00352309049747	Grey	No	
073	0908_MM315D_231123	HDPE (no PTFE)	20 mL	00352309049766	Grey	No	
074	0908_MM315S_231123	HDPE (no PTFE)	20 mL	00352309042764	Grey	No	
074	0908_MM315S_231123	HDPE (no PTFE)	20 mL	00352309042786	Grey	No	
074	0908_MM315S_231123	HDPE (no PTFE)	20 mL	00352309049633	Grey	No	
074	0908_MM315S_231123	HDPE (no PTFE)	20 mL	00352309049674	Grey	No	
075	0908_MM316D_231121	HDPE (no PTFE)	20 mL	00350822059367	Grey	No	
075	0908_MM316D_231121	HDPE (no PTFE)	20 mL	00350822059684	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612662\_2.1 / ESS2021AECOMAU0024

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard Info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

ID	Sample ID	Material	Volume	Barcode	Color	Preserved
075	0908_MW316D_231121	HDPE (no PTFE)	20 mL	00350822059851	Grey	No
075	0908_MW316D_231121	HDPE (no PTFE)	20 mL	00350822059522	Grey	No
076	0908_MW318D_231123	HDPE (no PTFE)	20 mL	00352309049695	Grey	No
076	0908_MW318D_231123	HDPE (no PTFE)	20 mL	00352309042758	Grey	No
076	0908_MW318D_231123	HDPE (no PTFE)	20 mL	00352309049752	Grey	No
076	0908_MW318D_231123	HDPE (no PTFE)	20 mL	00352309042743	Grey	No
077	0908_MW318S_231123	HDPE (no PTFE)	20 mL	00352309042814	Grey	No
077	0908_MW318S_231123	HDPE (no PTFE)	20 mL	00352309049591	Grey	No
077	0908_MW318S_231123	HDPE (no PTFE)	20 mL	00352309049715	Grey	No
077	0908_MW318S_231123	HDPE (no PTFE)	20 mL	00352309042947	Grey	No
078	0908_MW433_231123	HDPE (no PTFE)	20 mL	00352309041646	Grey	No
078	0908_MW433_231123	HDPE (no PTFE)	20 mL	00352309050198	Grey	No
078	0908_MW433_231123	HDPE (no PTFE)	20 mL	00352309050340	Grey	No
078	0908_MW433_231123	HDPE (no PTFE)	20 mL	00352309041572	Grey	No
079	0908_MW466_231122	HDPE (no PTFE)	20 mL	00352309042790	Grey	No
079	0908_MW466_231122	HDPE (no PTFE)	20 mL	00352309049706	Grey	No
079	0908_MW466_231122	HDPE (no PTFE)	20 mL	00352309042759	Grey	No
079	0908_MW466_231122	HDPE (no PTFE)	20 mL	00352309049644	Grey	No
079	0908_MW466_231122	HDPE (no PTFE)	20 mL	00352309049758	Grey	No
080	0908_MW468_231122	HDPE (no PTFE)	20 mL	00352309042781	Grey	No
080	0908_MW468_231122	HDPE (no PTFE)	20 mL	00352309049727	Grey	No
080	0908_MW468_231122	HDPE (no PTFE)	20 mL	00352309042810	Grey	No
081	0908_MW629_231123	HDPE (no PTFE)	20 mL	00352309042803	Grey	No
081	0908_MW629_231123	HDPE (no PTFE)	20 mL	00352309049634	Grey	No
081	0908_MW629_231123	HDPE (no PTFE)	20 mL	00352309042769	Grey	No
081	0908_MW629_231123	HDPE (no PTFE)	20 mL	00352309042807	Grey	No
082	0908_QC100_231121	HDPE (no PTFE)	20 mL	00350822036255	Grey	No

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER:  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

SAMPLER MOBILE:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact?  
 Free Ice / frozen ice bricks present upon receipt?  
 Random Sample Temperature on Receipt:  
 Other comments:

Turnaround Requirements: 5 Days  
 Biohazard info:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:				
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:				
082	0908_QC100_231121	HDPE (no PTFE)	20 mL	00350822036183	Grey	No	
082	0908_QC100_231121	HDPE (no PTFE)	20 mL	00350822059810	Grey	No	
082	0908_QC100_231121	HDPE (no PTFE)	20 mL	00350822059566	Grey	No	
083	0908_QC101_231121	HDPE (no PTFE)	20 mL	00350822063089	Grey	No	
083	0908_QC101_231121	HDPE (no PTFE)	20 mL	00350621001540	Grey	No	
083	0908_QC101_231121	HDPE (no PTFE)	20 mL	00350822063228	Grey	No	
083	0908_QC101_231121	HDPE (no PTFE)	20 mL	00350621001501	Grey	No	
084	0908_QC103_231123	HDPE (no PTFE)	20 mL	00352309049600	Grey	No	
084	0908_QC103_231123	HDPE (no PTFE)	20 mL	00352309049640	Grey	No	
084	0908_QC103_231123	HDPE (no PTFE)	20 mL	00352309049660	Grey	No	
084	0908_QC103_231123	HDPE (no PTFE)	20 mL	00352309049677	Grey	No	
085	0908_QC105_2311	HDPE (no PTFE)	20 mL	00352309049712	Grey	No	
085	0908_QC105_2311	HDPE (no PTFE)	20 mL	00352309049652	Grey	No	
085	0908_QC105_2311	HDPE (no PTFE)	20 mL	00352309049599	Grey	No	
085	0908_QC105_2311	HDPE (no PTFE)	20 mL	00352309042851	Grey	No	
086	0908_QC106_231122	HDPE (no PTFE)	20 mL	00352309050255	Grey	No	
086	0908_QC106_231122	HDPE (no PTFE)	20 mL	00352309050086	Grey	No	
086	0908_QC106_231122	HDPE (no PTFE)	20 mL	00352309050237	Grey	No	
086	0908_QC106_231122	HDPE (no PTFE)	20 mL	00352309050147	Grey	No	
087	0908_QC107_231127	HDPE (no PTFE)	20 mL	00352309049653	Grey	No	
087	0908_QC107_231127	HDPE (no PTFE)	20 mL	00352309049610	Grey	No	
087	0908_QC107_231127	HDPE (no PTFE)	20 mL	00352309049696	Grey	No	
087	0908_QC107_231127	HDPE (no PTFE)	20 mL	00352309049770	Grey	No	
088	0908_QC109_2311	HDPE (no PTFE)	20 mL	00352309049627	Grey	No	
088	0908_QC109_2311	HDPE (no PTFE)	20 mL	00352309049646	Grey	No	
088	0908_QC109_2311	HDPE (no PTFE)	20 mL	00352309049686	Grey	No	
088	0908_QC109_2311	HDPE (no PTFE)	20 mL	00352309049767	Grey	No	

Yes No N/A  
 Yes No N/A  
 C



# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney Environmental

COC#: 60092

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: 0908\_Biannual

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Free Ice / frozen ice bricks present upon receipt?

Random Sample Temperature on Receipt:

Other comments:

Yes No N/A  
Yes No N/A

C

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

089	0908_QC112_231123	HDPE (no PTFE)	20 mL	00352309041624	Grey	No	
089	0908_QC112_231123	HDPE (no PTFE)	20 mL	00352309041739	Grey	No	
089	0908_QC112_231123	HDPE (no PTFE)	20 mL	00352309041682	Grey	No	
089	0908_QC112_231123	HDPE (no PTFE)	20 mL	00352309041808	Grey	No	
090	0908_QC114_2311298	HDPE (no PTFE)	20 mL	00352309049672	Grey	No	
090	0908_QC114_2311298	HDPE (no PTFE)	20 mL	00352309049765	Grey	No	
090	0908_QC114_2311298	HDPE (no PTFE)	20 mL	00352309049702	Grey	No	
090	0908_QC114_2311298	HDPE (no PTFE)	20 mL	00352309049733	Grey	No	

Total Bottle Count: ALS: 358, Non ALS: 0



# CERTIFICATE OF ANALYSIS

Work Order : **ES2341299**

Page : 1 of 23

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**

Laboratory : Environmental Division Sydney

Contact : [REDACTED]

Contact : [REDACTED]

Address : LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61 2 8784 8555

Project : NSW\_0908\_PFASOMP\_23

Date Samples Received : 29-Nov-2023 15:20

Order number : 60612562\_2.1

Date Analysis Commenced : 30-Nov-2023

C-O-C number : 60802

Issue Date : 12-Dec-2023 16:00

Sampler : [REDACTED]

Site : 0908\_Biannual\_2

Quote number : SY/139/19 v4 60612562\_2.1

No. of samples received : 43

No. of samples analysed : 43



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW





## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: LOR for some analytes on sample ES2341299\_003, 007 raised due to high moisture content.
- Amendment (12/12/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [REDACTED] on 08/12/2023, for sample 005, 008, 009, 010, 016, 020, 023, 024, 026, 027, 034, 038, 039. All analysis results are as per the previous report.
- EP231X: Particular samples required dilution due to sample matrix. LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_231121	0908_SD005_231121	0908_SD006_231121	0908_SD007_231121	0908_SD009_231121
Sampling date / time					21-Nov-2023 10:03	21-Nov-2023 12:30	21-Nov-2023 10:48	21-Nov-2023 10:15	21-Nov-2023 11:28
Compound	CAS Number	LOR	Unit	ES2341299-001	ES2341299-002	ES2341299-003	ES2341299-004	ES2341299-005	ES2341299-005
				Result	Result	Result	Result	Result	Result
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	65.4	46.2	81.8	38.4	28.5	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0006	<0.0002	0.0004	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0006	<0.0002	0.0003	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0093	0.0007	0.0239	0.0010	0.0007	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0003	<0.0002	0.0030	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.143	0.0058	0.859	0.0150	0.0112	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0005	<0.0002	0.0082	<0.0002	<0.0002	<0.0002
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0007	<0.0002	0.0016	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0007	<0.0002	0.0012	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0007	<0.0002	0.0006	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	0.0005	<0.0002	0.0042	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0007	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0015	<0.0002	<0.0002	<0.0002



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD001_231121	0908_SD005_231121	0908_SD006_231121	0908_SD007_231121	0908_SD009_231121
Sampling date / time					21-Nov-2023 10:03	21-Nov-2023 12:30	21-Nov-2023 10:48	21-Nov-2023 10:15	21-Nov-2023 11:28
Compound	CAS Number	LOR	Unit	ES2341299-001	ES2341299-002	ES2341299-003	ES2341299-004	ES2341299-005	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0006	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.157</b>	<b>0.0065</b>	<b>0.905</b>	<b>0.0160</b>	<b>0.0119</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.152</b>	<b>0.0065</b>	<b>0.883</b>	<b>0.0160</b>	<b>0.0119</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.155</b>	<b>0.0065</b>	<b>0.887</b>	<b>0.0160</b>	<b>0.0119</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>99.8</b>	<b>92.0</b>	<b>97.6</b>	<b>103</b>	<b>92.3</b>	
13C8-PFOA	----	0.0002	%	<b>96.2</b>	<b>111</b>	<b>103</b>	<b>110</b>	<b>108</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD011_231128	0908_SD014_231121	0908_SD023_231120	0908_SD024_231120	0908_SD047_231123
Sampling date / time					28-Nov-2023 09:12	21-Nov-2023 11:47	20-Nov-2023 11:35	20-Nov-2023 10:50	23-Nov-2023 14:40
Compound	CAS Number	LOR	Unit	ES2341299-006	ES2341299-007	ES2341299-008	ES2341299-009	ES2341299-010	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	28.0	85.8	46.3	53.6	28.0	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0049	<0.0002	<0.0002	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0025	0.0004	0.0008	0.0036	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0002	0.0003	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0200	0.0565	0.0055	0.0248	0.0713	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0003	0.0005	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0007	0.0004	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0017	0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.0042	<0.0002	<0.0002	<0.0002	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD011_231128	0908_SD014_231121	0908_SD023_231120	0908_SD024_231120	0908_SD047_231123
Sampling date / time					28-Nov-2023 09:12	21-Nov-2023 11:47	20-Nov-2023 11:35	20-Nov-2023 10:50	23-Nov-2023 14:40
Compound	CAS Number	LOR	Unit	ES2341299-006	ES2341299-007	ES2341299-008	ES2341299-009	ES2341299-010	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0210</b>	<b>0.0686</b>	<b>0.0059</b>	<b>0.0286</b>	<b>0.0760</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0207</b>	<b>0.0590</b>	<b>0.0059</b>	<b>0.0256</b>	<b>0.0749</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0207</b>	<b>0.0639</b>	<b>0.0059</b>	<b>0.0284</b>	<b>0.0757</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>93.4</b>	<b>109</b>	<b>87.4</b>	<b>97.8</b>	<b>88.8</b>	
13C8-PFOA	----	0.0002	%	<b>104</b>	<b>95.4</b>	<b>107</b>	<b>110</b>	<b>110</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_231122	0908_SD055_231122	0908_SD059_231123	0908_SD060_231123	0908_SD062_231123
Sampling date / time					22-Nov-2023 11:41	22-Nov-2023 14:10	23-Nov-2023 11:29	23-Nov-2023 10:28	23-Nov-2023 13:10
Compound	CAS Number	LOR	Unit	ES2341299-011	ES2341299-012	ES2341299-013	ES2341299-014	ES2341299-015	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	22.9	27.9	19.1	63.8	39.4	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0034	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0053	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0005	0.0006	<0.0002	0.0848	0.0011	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0150	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0021	0.0019	0.0015	1.03	0.0192	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	0.002	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0012	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0080	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0011	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0045	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD048_231122	0908_SD055_231122	0908_SD059_231123	0908_SD060_231123	0908_SD062_231123
Sampling date / time					22-Nov-2023 11:41	22-Nov-2023 14:10	23-Nov-2023 11:29	23-Nov-2023 10:28	23-Nov-2023 13:10
Compound	CAS Number	LOR	Unit	ES2341299-011	ES2341299-012	ES2341299-013	ES2341299-014	ES2341299-015	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0026</b>	<b>0.0025</b>	<b>0.0015</b>	<b>1.16</b>	<b>0.0203</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0026</b>	<b>0.0025</b>	<b>0.0015</b>	<b>1.11</b>	<b>0.0203</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0026</b>	<b>0.0025</b>	<b>0.0015</b>	<b>1.14</b>	<b>0.0203</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>90.8</b>	<b>93.5</b>	<b>92.1</b>	<b>85.0</b>	<b>88.9</b>	
13C8-PFOA	----	0.0002	%	<b>111</b>	<b>107</b>	<b>101</b>	<b>105</b>	<b>106</b>	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD079_231121	0908_SD081_231123	0908_SD108_231123	0908_SD110_231123	0908_QC104_231121
Sampling date / time					21-Nov-2023 13:30	23-Nov-2023 13:01	23-Nov-2023 14:33	23-Nov-2023 14:17	21-Nov-2023 13:30
Compound	CAS Number	LOR	Unit	ES2341299-016	ES2341299-017	ES2341299-018	ES2341299-019	ES2341299-039	
				Result	Result	Result	Result	Result	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	27.5	16.3	54.9	49.6	18.0	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0019	<0.0002	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0004	<0.0005	<0.0002	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0097	0.0196	<0.0002	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0010	0.0021	<0.0002	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0005	0.0014	0.190	0.517	0.0008	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0033	0.0021	<0.0002	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.002	<0.001	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0011	0.0006	<0.0002	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0014	0.0021	<0.0002	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0004	0.0019	<0.0002	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0012	<0.0005	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0058	0.0398	<0.0002	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_SD079_231121	0908_SD081_231123	0908_SD108_231123	0908_SD110_231123	0908_QC104_231121
Sampling date / time					21-Nov-2023 13:30	23-Nov-2023 13:01	23-Nov-2023 14:33	23-Nov-2023 14:17	21-Nov-2023 13:30
Compound	CAS Number	LOR	Unit	ES2341299-016	ES2341299-017	ES2341299-018	ES2341299-019	ES2341299-039	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0012	<0.0005	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0012	<0.0005	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0012	<0.0005	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0012	<0.0005	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<b>0.0020</b>	<0.0005	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0005</b>	<b>0.0014</b>	<b>0.213</b>	<b>0.590</b>	<b>0.0008</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0005</b>	<b>0.0014</b>	<b>0.200</b>	<b>0.537</b>	<b>0.0008</b>	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0005</b>	<b>0.0014</b>	<b>0.203</b>	<b>0.546</b>	<b>0.0008</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>82.6</b>	<b>93.6</b>	<b>89.0</b>	<b>70.0</b>	<b>88.2</b>	
13C8-PFOA	----	0.0002	%	<b>103</b>	<b>103</b>	<b>99.2</b>	<b>78.0</b>	<b>107</b>	





## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_QC110_231122	0908_QC113_231128	----	----	----
Sampling date / time				22-Nov-2023 11:43	28-Nov-2023 09:11	----	----	----	
Compound	CAS Number	LOR	Unit	ES2341299-041	ES2341299-042	-----	-----	-----	
				Result	Result	----	----	----	
<b>EA055: Moisture Content (Dried @ 105-110°C)</b>									
Moisture Content	----	0.1	%	<b>49.0</b>	<b>27.8</b>	----	----	----	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<b>0.0010</b>	----	----	----	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<b>0.0030</b>	<b>0.0007</b>	----	----	----	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<b>0.0156</b>	<b>0.0191</b>	----	----	----	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<b>0.0003</b>	----	----	----	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<b>0.0003</b>	<0.0002	----	----	----	
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	



## Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Sample ID	0908_QC110_231122	0908_QC113_231128	----	----	----
Sampling date / time				22-Nov-2023 11:43	28-Nov-2023 09:11	----	----	----	
Compound	CAS Number	LOR	Unit	ES2341299-041	ES2341299-042	-----	-----	-----	
				Result	Result	----	----	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	----	----	----	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.0002	mg/kg	<b>0.0189</b>	<b>0.0211</b>	----	----	----	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<b>0.0186</b>	<b>0.0198</b>	----	----	----	
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<b>0.0189</b>	<b>0.0208</b>	----	----	----	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.0002	%	<b>99.6</b>	<b>105</b>	----	----	----	
13C8-PFOA	----	0.0002	%	<b>109</b>	<b>98.2</b>	----	----	----	



## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW001_231121	0908_SW005_231121	0908_SW007_231121	0908_SW009_231128	0908_SW011_231127
Sampling date / time				21-Nov-2023 10:02	21-Nov-2023 12:31	21-Nov-2023 10:16	28-Nov-2023 09:47	27-Nov-2023 14:14
Compound	CAS Number	LOR	Unit	ES2341299-020	ES2341299-021	ES2341299-022	ES2341299-023	ES2341299-024
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	<0.02	<0.02	0.03	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	<0.01	0.06	0.58	0.20
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	<0.02	<0.02	0.06	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.16	0.04	0.47	0.96	0.48
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.02	0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	<0.02	0.03	0.10	0.05
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	<0.01	<0.01	0.05	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW001_231121	0908_SW005_231121	0908_SW007_231121	0908_SW009_231128	0908_SW011_231127
Sampling date / time				21-Nov-2023 10:02	21-Nov-2023 12:31	21-Nov-2023 10:16	28-Nov-2023 09:47	27-Nov-2023 14:14	
Compound	CAS Number	LOR	Unit	ES2341299-020	ES2341299-021	ES2341299-022	ES2341299-023	ES2341299-024	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>1.54</b>	<b>0.04</b>	<b>0.58</b>	<b>1.83</b>	<b>0.75</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.40</b>	<b>0.04</b>	<b>0.53</b>	<b>1.54</b>	<b>0.68</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.52</b>	<b>0.04</b>	<b>0.58</b>	<b>1.74</b>	<b>0.75</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>101</b>	<b>99.1</b>	<b>95.0</b>	<b>98.4</b>	<b>100</b>	
13C8-PFOA	----	0.02	%	<b>103</b>	<b>101</b>	<b>103</b>	<b>102</b>	<b>102</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW014_231121	0908_SW023_231120	0908_SW024_231120	0908_SW047_231122	0908_SW048_231122
Sampling date / time				21-Nov-2023 11:47	20-Nov-2023 11:35	20-Nov-2023 10:50	22-Nov-2023 11:30	22-Nov-2023 11:41	
Compound	CAS Number	LOR	Unit	ES2341299-025	ES2341299-026	ES2341299-027	ES2341299-028	ES2341299-029	
				Result	Result	Result	Result	Result	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	0.04	0.02	
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	0.04	0.02	
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.06	0.03	0.69	0.18	
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	0.06	<0.02	
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.03	0.03	3.43	0.17	
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	0.06	<0.02	
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	0.16	0.06	
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	0.04	<0.02	
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	0.06	0.01	
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW014_231121	0908_SW023_231120	0908_SW024_231120	0908_SW047_231122	0908_SW048_231122
Sampling date / time				21-Nov-2023 11:47	20-Nov-2023 11:35	20-Nov-2023 10:50	22-Nov-2023 11:30	22-Nov-2023 11:41	
Compound	CAS Number	LOR	Unit	ES2341299-025	ES2341299-026	ES2341299-027	ES2341299-028	ES2341299-029	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<b>0.06</b>	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.03</b>	<b>0.09</b>	<b>0.06</b>	<b>4.64</b>	<b>0.46</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.03</b>	<b>0.09</b>	<b>0.06</b>	<b>4.12</b>	<b>0.35</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.03</b>	<b>0.09</b>	<b>0.06</b>	<b>4.54</b>	<b>0.44</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>96.2</b>	<b>96.2</b>	<b>97.2</b>	<b>97.9</b>	<b>97.8</b>	
13C8-PFOA	----	0.02	%	<b>102</b>	<b>105</b>	<b>103</b>	<b>102</b>	<b>104</b>	





## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW055_231122	0908_SW059_231123	0908_SW060_231123	0908_SW062_231123	0908_SW079_231121
Sampling date / time				22-Nov-2023 14:10	23-Nov-2023 11:28	23-Nov-2023 10:28	23-Nov-2023 13:10	21-Nov-2023 13:25	
Compound	CAS Number	LOR	Unit	ES2341299-030	ES2341299-031	ES2341299-032	ES2341299-033	ES2341299-034	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>1.69</b>	<b>1.99</b>	<b>4.40</b>	<b>26.6</b>	<b>1.03</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.26</b>	<b>1.52</b>	<b>3.16</b>	<b>18.5</b>	<b>0.79</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.59</b>	<b>1.86</b>	<b>4.06</b>	<b>24.8</b>	<b>0.98</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>98.5</b>	<b>94.0</b>	<b>99.7</b>	<b>96.8</b>	<b>98.1</b>	
13C8-PFOA	----	0.02	%	<b>104</b>	<b>101</b>	<b>101</b>	<b>103</b>	<b>105</b>	





## Analytical Results

Sub-Matrix: SURFACE WATER  
 (Matrix: WATER)

Sample ID

				0908_SW081_231123	0908_SW108_231122	0908_SW110_231122	0908_QC102_231121	0908_QC108_231122
Sampling date / time				23-Nov-2023 13:02	22-Nov-2023 14:41	22-Nov-2023 14:55	21-Nov-2023 13:25	22-Nov-2023 11:44
Compound	CAS Number	LOR	Unit	ES2341299-035	ES2341299-036	ES2341299-037	ES2341299-038	ES2341299-040
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.03	0.04	<0.02	0.08
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.04	0.06	<0.02	0.07
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.83	1.13	0.02	0.81
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.06	0.09	<0.02	0.05
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	5.54	7.61	0.02	0.60
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.05	0.07	<0.02	0.03
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.20	0.32	<0.02	0.14
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.03	0.04	<0.02	0.03
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.08	0.11	<0.01	0.06
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)				Sample ID	0908_SW081_231123	0908_SW108_231122	0908_SW110_231122	0908_QC102_231121	0908_QC108_231122
Sampling date / time					23-Nov-2023 13:02	22-Nov-2023 14:41	22-Nov-2023 14:55	21-Nov-2023 13:25	22-Nov-2023 11:44
Compound	CAS Number	LOR	Unit	ES2341299-035	ES2341299-036	ES2341299-037	ES2341299-038	ES2341299-040	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<b>0.04</b>	<b>6.86</b>	<b>9.47</b>	<b>0.04</b>	<b>1.87</b>	
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>0.04</b>	<b>6.37</b>	<b>8.74</b>	<b>0.04</b>	<b>1.41</b>	
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>0.04</b>	<b>6.76</b>	<b>9.32</b>	<b>0.04</b>	<b>1.75</b>	
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>100</b>	<b>97.4</b>	<b>103</b>	<b>99.2</b>	<b>108</b>	
13C8-PFOA	----	0.02	%	<b>104</b>	<b>107</b>	<b>102</b>	<b>104</b>	<b>99.4</b>	



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID		0908_QC111_231128	----	----	----	----
		Sampling date / time		28-Nov-2023 09:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341299-043	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.03	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.62	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.06	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.96	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.10	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----



## Analytical Results

Sub-Matrix: SURFACE WATER (Matrix: WATER)		Sample ID	0908_QC111_231128		----	----	----	----
		Sampling date / time	28-Nov-2023 09:40		----	----	----	----
Compound	CAS Number	LOR	Unit	ES2341299-043	-----	-----	-----	-----
				Result	---	---	---	---
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
<b>EP231P: PFAS Sums</b>								
Sum of PFAS	----	0.01	µg/L	<b>1.87</b>	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<b>1.58</b>	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<b>1.78</b>	----	----	----	----
<b>EP231S: PFAS Surrogate</b>								
13C4-PFOS	----	0.02	%	<b>102</b>	----	----	----	----
13C8-PFOA	----	0.02	%	<b>101</b>	----	----	----	----



### Surrogate Control Limits

Sub-Matrix: <b>SEDIMENT</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120

Sub-Matrix: <b>SURFACE WATER</b>		Recovery Limits (%)	
<i>Compound</i>	<i>CAS Number</i>	<i>Low</i>	<i>High</i>
<b>EP231S: PFAS Surrogate</b>			
<b>13C4-PFOS</b>	----	60	120
<b>13C8-PFOA</b>	----	60	120



# QUALITY CONTROL REPORT

Work Order : **ES2341299**

Page : 1 of 20

Amendment : **1**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : **[REDACTED]**  
Address : **LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**  
Contact : **[REDACTED]**  
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

Telephone : **----**  
Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**  
C-O-C number : **60802**  
Sampler : **[REDACTED]**  
Site : **0908\_Biannual\_2**  
Quote number : **SY/139/19 v4 60612562\_2.1**  
No. of samples received : **43**  
No. of samples analysed : **43**

Telephone : **+61 2 8784 8555**  
Date Samples Received : **29-Nov-2023**  
Date Analysis Commenced : **30-Nov-2023**  
Issue Date : **12-Dec-2023**



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

## Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5467274)</b>									
ES2341289-001	Anonymous	EA055: Moisture Content	----	0.1	%	63.0	62.2	1.3	0% - 20%
ES2341299-006	0908_SD011_231128	EA055: Moisture Content	----	0.1	%	28.0	28.5	1.6	0% - 20%
<b>EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5467275)</b>									
ES2341299-015	0908_SD062_231123	EA055: Moisture Content	----	0.1	%	39.4	42.4	7.3	0% - 20%
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0016	0.0020	20.6	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	0.0004	0.0003	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0510	0.0536	5.1	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	0.0004	0.0004	0.0	No Limit
ES2341299-005	0908_SD009_231121	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0007	0.0007	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0112	0.0099	12.4	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465959)</b>									
ES2341299-015	0908_SD062_231123	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0011	0.0010	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5465959) - continued</b>									
ES2341299-015	0908_SD062_231123	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0192	0.0197	2.7	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2341432-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2341299-005	0908_SD009_231121	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465959)</b>									
ES2341299-015	0908_SD062_231123	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit





Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5465959) - continued</b>									
ES2341299-015	0908_SD062_231123	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2341432-002	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958)</b>							
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	0908_SD009_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465958) - continued</b>									
ES2341299-005	0908_SD009_231121	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5465959)</b>									
ES2341299-015	0908_SD062_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341432-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465958)</b>									
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465958) - continued</b>									
ES2341289-001	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341299-005	0908_SD009_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5465959)</b>									
ES2341299-015	0908_SD062_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2341432-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460804)</b>									
ES2341299-020	0908_SW001_231121	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.24	0.23	0.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.16	1.19	2.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341299-030	0908_SW055_231122	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.71	0.81	13.0	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.55	0.63	13.9	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.10	0.07	27.6	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460804) - continued</b>											
ES2341299-030	0908_SW055_231122	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.06	0.10	48.5	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.04	0.0	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460812)</b>											
ES2341296-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
ES2341300-006	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit		
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460804)</b>											
ES2341299-020	0908_SW001_231121	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.0	No Limit		
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	0.07	0.0	No Limit		
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit		
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit		
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit		
		ES2341299-030	0908_SW055_231122	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.05	0.05	0.0	No Limit
				EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	0.03	0.0	No Limit
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4			0.02	µg/L	0.14	0.17	21.4	No Limit		
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9			0.02	µg/L	0.02	0.02	0.0	No Limit		
EP231X: Perfluorononanoic acid (PFNA)	375-95-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1			0.02	µg/L	<0.02	<0.02	0.0	No Limit		
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8			0.02	µg/L	<0.02	<0.02	0.0	No Limit		



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460804) - continued</b>									
ES2341299-030	0908_SW055_231122	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460804)</b>									
ES2341299-020	0908_SW001_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460804) - continued</b>									
ES2341299-020	0908_SW001_231121	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341299-030	0908_SW055_231122	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460812) - continued</b>									
ES2341300-006	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460804)</b>									
ES2341299-020	0908_SW001_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341299-030	0908_SW055_231122	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460804)</b>									
ES2341299-020	0908_SW001_231121	EP231X: Sum of PFAS	----	0.01	µg/L	1.54	1.56	1.3	0% - 20%
ES2341299-030	0908_SW055_231122	EP231X: Sum of PFAS	----	0.01	µg/L	1.69	1.92	12.7	0% - 20%
<b>EP231P: PFAS Sums (QC Lot: 5460812)</b>									

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 Work Order : ES2341299 Amendment 1  
 Client : AECOM AUSTRALIA PTY LTD  
 Project : NSW\_0908\_PFASOMP\_23



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231P: PFAS Sums (QC Lot: 5460812) - continued</b>									
ES2341296-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2341300-006	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.8	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.3	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	79.6	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.3	59.0	134
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465959)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.9	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.7	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	59.0	134
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	93.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	83.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.1	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.9	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.7	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.7	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.2	69.0	133
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465959)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	85.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.3	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.5	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.6	71.0	131



Sub-Matrix: SOIL

				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)
Method: Compound	CAS Number	LOR	Unit				LCS	Low
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465959) - continued</b>								
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.4	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.3	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.4	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	77.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	90.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	79.6	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.1	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	87.2	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.0	61.0	139
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465959)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.5	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.5	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.8	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.7	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	70.4	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.0	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	78.7	69.2	143



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465959)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	81.1	62.0	145	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.8	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.5	65.0	137	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	95.7	69.2	143	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460804)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	87.9	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.6	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.5	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	85.5	53.0	142	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>									
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.5	72.0	130	
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.6	71.0	127	
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.7	68.0	131	
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	134	
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.1	65.0	140	
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.2	53.0	142	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460804)</b>									
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.4	73.0	129	
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.5	72.0	129	
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.4	72.0	129	
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	130	
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	94.1	71.0	133	
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	130	
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	88.5	71.0	129	
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.2	69.0	133	
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	134	
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.2	65.0	144	
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.6	71.0	132	

**EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)**



Sub-Matrix: WATER

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					LCS	Low	High	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812) - continued</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	92.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460804)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.7	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	88.1	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460804)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Acceptable Limits (%)	
						LCS	Low	High	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460804) - continued</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.6	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	85.3	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	101	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	84.4	71.4	144	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>									
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	94.5	63.0	143	
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	96.3	64.0	140	
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	118	67.0	138	
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.3	71.4	144	

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery (%) MS	Acceptable Limits (%)		
							Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465958)</b>								
ES2341289-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	81.1	72.0	128	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.8	73.0	123	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	94.3	67.0	130	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	97.9	70.0	132	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	86.6	59.0	134	
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5465959)</b>								
ES2341299-015	0908_SD062_231123	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	76.2	72.0	128	
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	73.8	73.0	123	
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	74.7	67.0	130	
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	79.1	70.0	132	
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	# Not Determined	68.0	136	
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	85.5	59.0	134	
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958)</b>								
ES2341289-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.8	71.0	135	
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	93.4	69.0	132	
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	104	70.0	132	



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465958) - continued</b>							
ES2341289-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	95.4	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	107	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	94.0	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.4	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	95.2	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	93.4	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	93.4	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	102	69.0	133
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5465959)</b>							
ES2341299-015	0908_SD062_231123	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	76.8	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	76.5	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	83.5	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	80.2	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	81.2	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	78.5	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	80.1	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	84.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	85.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.2	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	93.1	69.0	133
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465958)</b>							
ES2341289-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	97.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	110	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	87.8	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	80.2	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	95.3	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	107	61.0	139
		<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465959)</b>					
ES2341299-015	0908_SD062_231123	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	80.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	83.9	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	91.4	69.8	131





Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5465959) - continued</b>							
ES2341299-015	0908_SD062_231123	EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	86.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	84.7	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	82.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	96.7	61.0	139
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465958)</b>							
ES2341289-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	74.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	85.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	103	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	92.1	69.2	143
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5465959)</b>							
ES2341299-015	0908_SD062_231123	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	83.8	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	94.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	90.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	83.5	69.2	143

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460804)</b>							
ES2341299-021	0908_SW005_231121	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	96.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.9	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	99.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	88.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.8	53.0	142
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	82.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	71.3	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460804)</b>							
ES2341299-021	0908_SW005_231121	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.5	73.0	129



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460804) - continued</b>							
ES2341299-021	0908_SW005_231121	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.5	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	87.4	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	86.2	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	95.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	80.9	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	102	71.0	132
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	89.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.5	71.0	132		
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460804)</b>							
ES2341299-021	0908_SW005_231121	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	85.5	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	89.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.0	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	83.4	61.0	135
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	102	68.0	141





Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812) - continued</b>							
ES2341296-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	94.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	89.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.0	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460804)</b>							
ES2341299-021	0908_SW005_231121	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	78.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	88.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	83.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.4	71.4	144
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.4	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341299	Page	: 1 of 11
Amendment	: 1		
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: 0908_Biannual_2	Issue Date	: 12-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 43
Order number	: 60612562_2.1	No. of samples analysed	: 43

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

#### Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

#### Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.





Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content (Dried @ 105-110°C) - Continued</b>								
0908_SD047_231123, 0908_SD060_231123, 0908_SD081_231123, 0908_SD110_231123	0908_SD059_231123, 0908_SD062_231123, 0908_SD108_231123,	23-Nov-2023	----	----	----	04-Dec-2023	07-Dec-2023	✓
<b>HDPE Soil Jar (EA055)</b> 0908_SD011_231128,	0908_QC113_231128	28-Nov-2023	----	----	----	04-Dec-2023	12-Dec-2023	✓
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
<b>HDPE Soil Jar (EP231X)</b> 0908_SD023_231120,	0908_SD024_231120	20-Nov-2023	04-Dec-2023	18-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD001_231121, 0908_SD006_231121, 0908_SD009_231121,	0908_SD005_231121, 0908_SD007_231121, 0908_SD014_231121	21-Nov-2023	04-Dec-2023	19-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD079_231121,	0908_QC104_231121	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD048_231122,	0908_SD055_231122	22-Nov-2023	04-Dec-2023	20-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_QC110_231122		22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD047_231123, 0908_SD060_231123	0908_SD059_231123,	23-Nov-2023	04-Dec-2023	21-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD062_231123, 0908_SD108_231123,	0908_SD081_231123, 0908_SD110_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_SD011_231128		28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
<b>HDPE Soil Jar (EP231X)</b> 0908_QC113_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	14-Jan-2024	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD023_231120,	0908_SD024_231120	20-Nov-2023	04-Dec-2023	18-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD001_231121, 0908_SD006_231121, 0908_SD009_231121,	0908_SD005_231121, 0908_SD007_231121, 0908_SD014_231121	21-Nov-2023	04-Dec-2023	19-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD079_231121,	0908_QC104_231121	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD048_231122,	0908_SD055_231122	22-Nov-2023	04-Dec-2023	20-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC110_231122		22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD047_231123, 0908_SD060_231123	0908_SD059_231123,	23-Nov-2023	04-Dec-2023	21-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD062_231123, 0908_SD108_231123,	0908_SD081_231123, 0908_SD110_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD011_231128		28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC113_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	14-Jan-2024	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE Soil Jar (EP231X) 0908_SD023_231120,	0908_SD024_231120	20-Nov-2023	04-Dec-2023	18-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD001_231121, 0908_SD006_231121, 0908_SD009_231121,	0908_SD005_231121, 0908_SD007_231121, 0908_SD014_231121	21-Nov-2023	04-Dec-2023	19-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD079_231121,	0908_QC104_231121	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD048_231122,	0908_SD055_231122	22-Nov-2023	04-Dec-2023	20-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC110_231122		22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD047_231123, 0908_SD060_231123	0908_SD059_231123,	23-Nov-2023	04-Dec-2023	21-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD062_231123, 0908_SD108_231123,	0908_SD081_231123, 0908_SD110_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD011_231128		28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC113_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	14-Jan-2024	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE Soil Jar (EP231X) 0908_SD023_231120,	0908_SD024_231120	20-Nov-2023	04-Dec-2023	18-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD001_231121, 0908_SD006_231121, 0908_SD009_231121,	0908_SD005_231121, 0908_SD007_231121, 0908_SD014_231121	21-Nov-2023	04-Dec-2023	19-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD079_231121,	0908_QC104_231121	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD048_231122,	0908_SD055_231122	22-Nov-2023	04-Dec-2023	20-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC110_231122		22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD047_231123, 0908_SD060_231123	0908_SD059_231123,	23-Nov-2023	04-Dec-2023	21-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD062_231123, 0908_SD108_231123,	0908_SD081_231123, 0908_SD110_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD011_231128		28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC113_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	14-Jan-2024	✓



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231P: PFAS Sums</b>								
HDPE Soil Jar (EP231X) 0908_SD023_231120,	0908_SD024_231120	20-Nov-2023	04-Dec-2023	18-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD001_231121, 0908_SD006_231121, 0908_SD009_231121,	0908_SD005_231121, 0908_SD007_231121, 0908_SD014_231121	21-Nov-2023	04-Dec-2023	19-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD079_231121,	0908_QC104_231121	21-Nov-2023	05-Dec-2023	19-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD048_231122,	0908_SD055_231122	22-Nov-2023	04-Dec-2023	20-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC110_231122		22-Nov-2023	05-Dec-2023	20-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD047_231123, 0908_SD060_231123	0908_SD059_231123,	23-Nov-2023	04-Dec-2023	21-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD062_231123, 0908_SD108_231123,	0908_SD081_231123, 0908_SD110_231123	23-Nov-2023	05-Dec-2023	21-May-2024	✓	06-Dec-2023	14-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_SD011_231128		28-Nov-2023	04-Dec-2023	26-May-2024	✓	06-Dec-2023	13-Jan-2024	✓
HDPE Soil Jar (EP231X) 0908_QC113_231128		28-Nov-2023	05-Dec-2023	26-May-2024	✓	06-Dec-2023	14-Jan-2024	✓

Matrix: WATER

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW023_231120,	0908_SW024_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW001_231121, 0908_SW007_231121, 0908_SW079_231121,	0908_SW005_231121, 0908_SW014_231121, 0908_QC102_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW047_231122, 0908_SW055_231122, 0908_SW110_231122,	0908_SW048_231122, 0908_SW108_231122, 0908_QC108_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW059_231123, 0908_SW062_231123,	0908_SW060_231123, 0908_SW081_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW011_231127		27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW009_231128,	0908_QC111_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓





Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW023_231120,	0908_SW024_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW001_231121, 0908_SW007_231121, 0908_SW079_231121,	0908_SW005_231121, 0908_SW014_231121, 0908_QC102_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW047_231122, 0908_SW055_231122, 0908_SW110_231122,	0908_SW048_231122, 0908_SW108_231122, 0908_QC108_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW059_231123, 0908_SW062_231123,	0908_SW060_231123, 0908_SW081_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW011_231127		27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW009_231128,	0908_QC111_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_SW023_231120,	0908_SW024_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW001_231121, 0908_SW007_231121, 0908_SW079_231121,	0908_SW005_231121, 0908_SW014_231121, 0908_QC102_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW047_231122, 0908_SW055_231122, 0908_SW110_231122,	0908_SW048_231122, 0908_SW108_231122, 0908_QC108_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW059_231123, 0908_SW062_231123,	0908_SW060_231123, 0908_SW081_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW011_231127		27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW009_231128,	0908_QC111_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓



Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_SW023_231120,	0908_SW024_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW001_231121, 0908_SW007_231121, 0908_SW079_231121,	0908_SW005_231121, 0908_SW014_231121, 0908_QC102_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW047_231122, 0908_SW055_231122, 0908_SW110_231122,	0908_SW048_231122, 0908_SW108_231122, 0908_QC108_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW059_231123, 0908_SW062_231123,	0908_SW060_231123, 0908_SW081_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW011_231127		27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW009_231128,	0908_QC111_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_SW023_231120,	0908_SW024_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW001_231121, 0908_SW007_231121, 0908_SW079_231121,	0908_SW005_231121, 0908_SW014_231121, 0908_QC102_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW047_231122, 0908_SW055_231122, 0908_SW110_231122,	0908_SW048_231122, 0908_SW108_231122, 0908_QC108_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW059_231123, 0908_SW062_231123,	0908_SW060_231123, 0908_SW081_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW011_231127		27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_SW009_231128,	0908_QC111_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055	3	33	9.09	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	33	12.12	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	33	6.06	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	38	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Preparation Methods	Method	Matrix	Method Descriptions
QuEChERS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
ES2341299-001	21-Nov-2023 10:03	0908_SD001_231121	✓	✓
ES2341299-002	21-Nov-2023 12:30	0908_SD005_231121	✓	✓
ES2341299-003	21-Nov-2023 10:48	0908_SD006_231121	✓	✓
ES2341299-004	21-Nov-2023 10:15	0908_SD007_231121	✓	✓
ES2341299-005	21-Nov-2023 11:28	0908_SD009_231121	✓	✓
ES2341299-006	28-Nov-2023 09:12	0908_SD011_231128	✓	✓
ES2341299-007	21-Nov-2023 11:47	0908_SD014_231121	✓	✓
ES2341299-008	20-Nov-2023 11:35	0908_SD023_231120	✓	✓
ES2341299-009	20-Nov-2023 10:50	0908_SD024_231120	✓	✓
ES2341299-010	23-Nov-2023 14:40	0908_SD047_231123	✓	✓
ES2341299-011	22-Nov-2023 11:41	0908_SD048_231122	✓	✓
ES2341299-012	22-Nov-2023 14:10	0908_SD055_231122	✓	✓
ES2341299-013	23-Nov-2023 11:29	0908_SD059_231123	✓	✓
ES2341299-014	23-Nov-2023 10:28	0908_SD060_231123	✓	✓
ES2341299-015	23-Nov-2023 13:10	0908_SD062_231123	✓	✓
ES2341299-016	21-Nov-2023 13:30	0908_SD079_231121	✓	✓
ES2341299-017	23-Nov-2023 13:01	0908_SD081_231123	✓	✓
ES2341299-018	23-Nov-2023 14:33	0908_SD108_231123	✓	✓
ES2341299-019	23-Nov-2023 14:17	0908_SD110_231123	✓	✓
ES2341299-039	21-Nov-2023 13:30	0908_QC104_231121	✓	✓
ES2341299-041	22-Nov-2023 11:43	0908_QC110_231122	✓	✓
ES2341299-042	28-Nov-2023 09:11	0908_QC113_231128	✓	✓



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341299-020	21-Nov-2023 10:02	0908_SW001_231121	✓
ES2341299-021	21-Nov-2023 12:31	0908_SW005_231121	✓
ES2341299-022	21-Nov-2023 10:16	0908_SW007_231121	✓
ES2341299-023	28-Nov-2023 09:47	0908_SW009_231128	✓
ES2341299-024	27-Nov-2023 14:14	0908_SW011_231127	✓
ES2341299-025	21-Nov-2023 11:47	0908_SW014_231121	✓
ES2341299-026	20-Nov-2023 11:35	0908_SW023_231120	✓
ES2341299-027	20-Nov-2023 10:50	0908_SW024_231120	✓
ES2341299-028	22-Nov-2023 11:30	0908_SW047_231122	✓
ES2341299-029	22-Nov-2023 11:41	0908_SW048_231122	✓
ES2341299-030	22-Nov-2023 14:10	0908_SW055_231122	✓
ES2341299-031	23-Nov-2023 11:28	0908_SW059_231123	✓
ES2341299-032	23-Nov-2023 10:28	0908_SW060_231123	✓
ES2341299-033	23-Nov-2023 13:10	0908_SW062_231123	✓
ES2341299-034	21-Nov-2023 13:25	0908_SW079_231121	✓
ES2341299-035	23-Nov-2023 13:02	0908_SW081_231123	✓
ES2341299-036	22-Nov-2023 14:41	0908_SW108_231122	✓
ES2341299-037	22-Nov-2023 14:55	0908_SW110_231122	✓
ES2341299-038	21-Nov-2023 13:25	0908_QC102_231121	✓
ES2341299-040	22-Nov-2023 11:44	0908_QC108_231122	✓
ES2341299-043	28-Nov-2023 09:40	0908_QC111_231128	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email







# CHAIN OF CUSTODY

ALS Laboratory: ES Sydney Environmental

COC#: 60802

ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA5OMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGE  
PRIMARY SAMPLE



CONTACT PH: [REDACTED]  
SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *ZKW*  
DATE TIME: 29/11/23

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

## SAMPLE DETAILS

## ANALYSIS REQUIRED

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_SD001_231121		21/11/2023 10:03 AM	SOIL	ALS: 1 Non ALS: 0	No	PFAS Soil - New Analysis SOIL	
002	0908_SD005_231121		21/11/2023 12:30 PM	SOIL	ALS: 1 Non ALS: 0	No	PFAS Waters - New Analysis WATER	
003	0908_SD006_231121		21/11/2023 10:48 AM	SOIL	ALS: 1 Non ALS: 0	No	ALTERNATIVE ANALYSIS	Possibly small worms in sample.
004	0908_SD007_231121		21/11/2023 10:15 AM	SOIL	ALS: 1 Non ALS: 0	No		
005	0908_SD009_231121		21/11/2023 11:12 AM	SOIL	ALS: 1 Non ALS: 0	No		
006	0908_SD011_231128		28/11/2023 09:12 AM	SOIL	ALS: 1 Non ALS: 0	No		
007	0908_SD014_231121		21/11/2023 11:47 AM	SOIL	ALS: 1 Non ALS: 0	No		

Telephone : + 61-2-9794 9555



Environmental Division  
Sydney  
Work Order Reference  
**ES2341299**



**CHAIN OF CUSTODY**

ALS COC#: 60802 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO: [REDACTED]

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO: [REDACTED]

EMAIL INVOICES TO: [REDACTED]

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLER MOBILE: [REDACTED]

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0908_SD023_231120		20/11/2023 11:58 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
009	0908_SD024_231120		20/11/2023 11:37 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
010	0908_SD047_231123		23/11/2023 02:50 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
011	0908_SD048_231122		22/11/2023 11:41 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
012	0908_SD055_231122		22/11/2023 02:10 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
013	0908_SD059_231123		23/11/2023 11:29 AM	SOIL	ALS: 1 Non ALS: 0	No	X			
014	0908_SD060_231123		23/11/2023 10:28 AM	SOIL	ALS: 1 Non ALS: 0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:
TURNAROUND REQUIREMENTS: 5 Days		LABORATORY USE ONLY (Circle)	
Biohazard info:		Custody Seal intact? Yes No N/A	
		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
		Random Sample Temperature on Receipt: C	
		Other comments:	

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0908_SDP062_231123		23/11/2023 01:10 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
016	0908_SDP079_231121		21/11/2023 12:55 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
017	0908_SDP081_231123		23/11/2023 01:01 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
018	0908_SDP108_231123		23/11/2023 02:33 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
019	0908_SDP110_231123		23/11/2023 02:17 PM	SOIL	ALS: 1 Non ALS: 0	No	X			
020	0908_SWD01_231121		21/11/2023 10:13 AM	WATER	ALS: 3 Non ALS: 0	No		X		
021	0908_SWD05_231121		21/11/2023 12:31 PM	WATER	ALS: 4 Non ALS: 0	No		X		

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard Info:

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis	PFAS Waters - New Analysis	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
022	0908_SW007_231121		21/11/2023 10:16 AM	WATER	ALS: 4 Non ALS: 0	No		X		
023	0908_SW009_231121		28/11/2023 09:11 AM	WATER	ALS: 4 Non ALS: 0	No		X		
024	0908_SW011_231127		27/11/2023 01:42 PM	WATER	ALS: 4 Non ALS: 0	No		X		
025	0908_SW014_231121		21/11/2023 11:47 AM	WATER	ALS: 4 Non ALS: 0	No		X		
026	0908_SW023_231120		20/11/2023 12:00 PM	WATER	ALS: 4 Non ALS: 0	No		X		
027	0908_SW024_231120		20/11/2023 11:40 AM	WATER	ALS: 4 Non ALS: 0	No		X		
028	0908_SW047_231122		22/11/2023 11:30 AM	WATER	ALS: 4 Non ALS: 0	No		X		



**CHAIN OF CUSTODY**

ALS Laboratory: ES, Sydney  
Environmental

COC#: 60802

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER:  
PRIMARY SAMPLER:



EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: C

Other comments:

CONTACT PH: SAMPLER MOBILE:  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002  
4

SAMPLE DETAILS						ANALYSIS REQUIRED				
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soil - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0908_SW048_231122		22/11/2023 11:41 AM	WATER	ALS: 4 Non ALS: 0	No		X		
030	0908_SW055_231122		22/11/2023 02:10 PM	WATER	ALS: 4 Non ALS: 0	No		X		
031	0908_SW059_231123		23/11/2023 11:28 AM	WATER	ALS: 4 Non ALS: 0	No		X		
032	0908_SW060_231123		23/11/2023 10:28 AM	WATER	ALS: 4 Non ALS: 0	No		X		
033	0908_SW062_231123		23/11/2023 01:10 PM	WATER	ALS: 4 Non ALS: 0	No		X		
034	0908_SW079_231121		21/11/2023 12:54 PM	WATER	ALS: 4 Non ALS: 0	No		X		
035	0908_SW081_231123		23/11/2023 01:02 PM	WATER	ALS: 4 Non ALS: 0	No		X		



# CHAIN OF CUSTODY

COC# 60802 ALS Laboratory: ES Sydney Environmental

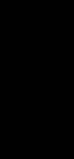
CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER  
PRIMARY SAMPLER:



CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

EMAIL REPORTS TO:  
EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS : 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: °C  
Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED					
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Soils - New Analysis SOIL	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
036	0908_SW1108_231122		22/11/2023 02:41 PM	WATER	ALS:4 Non ALS:0	No		X		
037	0908_SW1110_231122		22/11/2023 02:56 PM	WATER	ALS:4 Non ALS:0	No		X		
038	0908_QC1102_231121		21/11/2023 12:56 PM	WATER	ALS:4 Non ALS:0	No		X		
039	0908_QC1104_231121		21/11/2023 12:56 PM	SOIL	ALS:1 Non ALS:0	No	X			
040	0908_QC1108_231122		22/11/2023 11:44 AM	WATER	ALS:4 Non ALS:0	No		X		
041	0908_QC1110_231122		22/11/2023 11:43 AM	SOIL	ALS:1 Non ALS:0	No	X			
042	0908_QC1113_231128		28/11/2023 09:11 AM	SOIL	ALS:1 Non ALS:0	No	X			

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612962\_2.1 / ES2021AECOMAU002  
 4

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard Info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

**SAMPLE DETAILS**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
043	0908_QC111_231128		28/11/2023 09:40 AM	WATER	ALS: 4 Non ALS: 0	No	PFAS Soil - New Analysis SOIL PFAS Waters - New Analysis WATER ALTERNATIVE ANALYSIS	



# CHAIN OF CUSTODY

ALS Laboratory ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY/139/19 v4 60612562\_2.1 / ESS2021AECOMAU002  
4

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_SDP001_231121	HDPE Soil Jar	200 mL	00621222029976	Grey	No	
002	0908_SDP005_231121	HDPE Soil Jar	200 mL	00621222029956	Grey	No	
003	0908_SDP006_231121	HDPE Soil Jar	200 mL	00621222029930	Grey	No	
004	0908_SDP007_231121	HDPE Soil Jar	200 mL	00621222029963	Grey	No	
005	0908_SDP009_231121	HDPE Soil Jar	200 mL	00621222029929	Grey	No	
006	0908_SDP011_231128	HDPE Soil Jar	200 mL	00621222085900	Grey	No	
007	0908_SDP014_231121	HDPE Soil Jar	200 mL	00621222029901	Grey	No	
008	0908_SDP023_231120	HDPE Soil Jar	200 mL	00621222029974	Grey	No	
009	0908_SDP024_231120	HDPE Soil Jar	200 mL	00621222029985	Grey	No	
010	0908_SDP047_231123	HDPE Soil Jar	200 mL	006212220989335	Grey	No	
011	0908_SDP048_231122	HDPE Soil Jar	200 mL	00621122012045	Grey	No	
012	0908_SDP055_231122	HDPE Soil Jar	200 mL	00621122086974	Grey	No	
013	0908_SDP059_231123	HDPE Soil Jar	200 mL	00621122012077	Grey	No	
014	0908_SDP080_231123	HDPE Soil Jar	200 mL	00621122012058	Grey	No	
015	0908_SDP062_231123	HDPE Soil Jar	200 mL	00621122012044	Grey	No	
016	0908_SDP079_231121	HDPE Soil Jar	200 mL	00621222029971	Grey	No	
017	0908_SDP081_231123	HDPE Soil Jar	200 mL	00621122012111	Grey	No	
018	0908_SDP108_231123	HDPE Soil Jar	200 mL	00621122012062	Grey	No	
019	0908_SDP110_231123	HDPE Soil Jar	200 mL	00621122012039	Grey	No	
020	0908_SDP001_231121	HDPE (no PTFE)	20 mL	00350822059740	Grey	No	
020	0908_SDP001_231121	HDPE (no PTFE)	20 mL	00350822059730	Grey	No	
020	0908_SDP001_231121	HDPE (no PTFE)	20 mL	00350822036197	Grey	No	
021	0908_SDP005_231121	HDPE (no PTFE)	20 mL	00350822063194	Grey	No	
021	0908_SDP005_231121	HDPE (no PTFE)	20 mL	00350822063189	Grey	No	
021	0908_SDP005_231121	HDPE (no PTFE)	20 mL	00350822063145	Grey	No	
021	0908_SDP005_231121	HDPE (no PTFE)	20 mL	00350822063179	Grey	No	



CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFASOMP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002\_4

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

**LABORATORY USE ONLY (Circle)**

Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

QTY	DESCRIPTION	DATE TIME	DATE TIME	DATE TIME	DATE TIME
022	0908_SW007_231121 HDPE (no PTFE)	20 mL	00350822059387	Grey	No
022	0908_SW007_231121 HDPE (no PTFE)	20 mL	00350822059409	Grey	No
022	0908_SW007_231121 HDPE (no PTFE)	20 mL	00350822059752	Grey	No
022	0908_SW007_231121 HDPE (no PTFE)	20 mL	00350822059442	Grey	No
023	0908_SW009_231121 HDPE (no PTFE)	20 mL	00350821036945	Grey	No
023	0908_SW009_231121 HDPE (no PTFE)	20 mL	00350822036258	Grey	No
023	0908_SW009_231121 HDPE (no PTFE)	20 mL	00350822059912	Grey	No
023	0908_SW009_231121 HDPE (no PTFE)	20 mL	00350821056567	Grey	No
024	0908_SW011_231127 HDPE (no PTFE)	20 mL	00352309049662	Grey	No
024	0908_SW011_231127 HDPE (no PTFE)	20 mL	00352309042738	Grey	No
024	0908_SW011_231127 HDPE (no PTFE)	20 mL	00352309049605	Grey	No
024	0908_SW011_231127 HDPE (no PTFE)	20 mL	00352309042811	Grey	No
025	0908_SW014_231121 HDPE (no PTFE)	20 mL	00350822059939	Grey	No
025	0908_SW014_231121 HDPE (no PTFE)	20 mL	00350822036146	Grey	No
025	0908_SW014_231121 HDPE (no PTFE)	20 mL	00350822059945	Grey	No
025	0908_SW014_231121 HDPE (no PTFE)	20 mL	00350822059958	Grey	No
026	0908_SW023_231120 HDPE (no PTFE)	20 mL	00350822059680	Grey	No
026	0908_SW023_231120 HDPE (no PTFE)	20 mL	00350822036217	Grey	No
026	0908_SW023_231120 HDPE (no PTFE)	20 mL	00350822036170	Grey	No
026	0908_SW023_231120 HDPE (no PTFE)	20 mL	00350822059824	Grey	No
027	0908_SW024_231120 HDPE (no PTFE)	20 mL	00350822039749	Grey	No
027	0908_SW024_231120 HDPE (no PTFE)	20 mL	00350822059815	Grey	No
027	0908_SW024_231120 HDPE (no PTFE)	20 mL	00350822036078	Grey	No
027	0908_SW024_231120 HDPE (no PTFE)	20 mL	00350822036095	Grey	No
028	0908_SW047_231122 HDPE (no PTFE)	20 mL	00352309049693	Grey	No
028	0908_SW047_231122 HDPE (no PTFE)	20 mL	00352309049621	Grey	No
028	0908_SW047_231122 HDPE (no PTFE)	20 mL	00352309042763	Grey	No



RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908\_Biannual\_2

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free Ice / Frozen Ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY139/19 v4 60612562\_2.1 / ESS2021AECOMAU0024

EMAIL REPORTS TO:

EMAIL INVOICES TO:

035	0908_SW081_231123	HDPE (no PTFE)	20 mL	00352309041658	Grey	No	
035	0908_SW081_231123	HDPE (no PTFE)	20 mL	00352309050238	Grey	No	
036	0908_SW108_231122	HDPE (no PTFE)	20 mL	00352309050162	Grey	No	
036	0908_SW108_231122	HDPE (no PTFE)	20 mL	00352309050105	Grey	No	
036	0908_SW108_231122	HDPE (no PTFE)	20 mL	00352309050121	Grey	No	
036	0908_SW108_231122	HDPE (no PTFE)	20 mL	00352309050101	Grey	No	
037	0908_SW110_231122	HDPE (no PTFE)	20 mL	00352309042819	Grey	No	
037	0908_SW110_231122	HDPE (no PTFE)	20 mL	00352309042780	Grey	No	
037	0908_SW110_231122	HDPE (no PTFE)	20 mL	00352309042823	Grey	No	
037	0908_SW110_231122	HDPE (no PTFE)	20 mL	00352309042809	Grey	No	
038	0908_QC102_231121	HDPE (no PTFE)	20 mL	00350822036125	Grey	No	
038	0908_QC102_231121	HDPE (no PTFE)	20 mL	00350822059592	Grey	No	
038	0908_QC102_231121	HDPE (no PTFE)	20 mL	00350822059970	Grey	No	
038	0908_QC102_231121	HDPE (no PTFE)	20 mL	00350822058420	Grey	No	
039	0908_QC104_231121	HDPE Soil Jar	200 mL	00621222029863	Grey	No	
040	0908_QC108_231122	HDPE (no PTFE)	20 mL	00352309050094	Grey	No	
040	0908_QC108_231122	HDPE (no PTFE)	20 mL	00352309050244	Grey	No	
040	0908_QC108_231122	HDPE (no PTFE)	20 mL	00352309050214	Grey	No	
040	0908_QC108_231122	HDPE (no PTFE)	20 mL	00352308050093	Grey	No	
041	0908_QC110_231122	HDPE Soil Jar	200 mL	00621122012040	Grey	No	
042	0908_QC113_231128	HDPE Soil Jar	200 mL	00621122012084	Grey	No	
043	0908_QC111_231128	HDPE (no PTFE)	20 mL	00352309049885	Grey	No	
043	0908_QC114_231128	HDPE (no PTFE)	20 mL	00352309042815	Grey	No	
043	0908_QC111_231128	HDPE (no PTFE)	20 mL	00352309049742	Grey	No	
043	0908_QC111_231128	HDPE (no PTFE)	20 mL	00352309049729	Grey	No	

Total Bottle Count: ALS: 105, Non ALS: 0



## CERTIFICATE OF ANALYSIS

Work Order	: <b>ES2341300</b>	Page	: 1 of 9
Client	: <b>AECOM AUSTRALIA PTY LTD</b>	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023 15:20
Order number	: 60612562_2.1	Date Analysis Commenced	: 30-Nov-2023
C-O-C number	: 60808	Issue Date	: 05-Dec-2023 09:34
Sampler	: [REDACTED]		
Site	: 0908 - Biannual		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 14		
No. of samples analysed	: 14		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

**Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.**

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting  
ø = ALS is not NATA accredited for these tests.  
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC300_231120	0908_QC301_231120	0908_QC303_231121	0908_QC304_231121	0908_QC306_231122
Sampling date / time					20-Nov-2023 18:32	20-Nov-2023 18:50	21-Nov-2023 18:29	21-Nov-2023 18:32	22-Nov-2023 17:40
Compound	CAS Number	LOR	Unit	ES2341300-001	ES2341300-002	ES2341300-003	ES2341300-004	ES2341300-005	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	101	95.3	102	94.4	100	
13C8-PFOA	----	0.02	%	98.1	101	98.8	98.6	103	



## Analytical Results

Sub-Matrix: RINSATE  
 (Matrix: WATER)

Sample ID

				0908_QC307_231122	0908_QC309_231123	0908_QC310_231123	0908_QC312_231124	0908_QC313_231124
Sampling date / time				22-Nov-2023 17:44	23-Nov-2023 17:42	23-Nov-2023 17:49	24-Nov-2023 11:51	24-Nov-2023 11:51
Compound	CAS Number	LOR	Unit	ES2341300-006	ES2341300-007	ES2341300-008	ES2341300-009	ES2341300-010
				Result	Result	Result	Result	Result
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC307_231122	0908_QC309_231123	0908_QC310_231123	0908_QC312_231124	0908_QC313_231124
Sampling date / time					22-Nov-2023 17:44	23-Nov-2023 17:42	23-Nov-2023 17:49	24-Nov-2023 11:51	24-Nov-2023 11:51
Compound	CAS Number	LOR	Unit	ES2341300-006	ES2341300-007	ES2341300-008	ES2341300-009	ES2341300-010	
				Result	Result	Result	Result	Result	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>97.8</b>	<b>96.8</b>	<b>96.5</b>	<b>99.6</b>	<b>98.6</b>	
13C8-PFOA	----	0.02	%	<b>105</b>	<b>99.1</b>	<b>102</b>	<b>107</b>	<b>103</b>	





## Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)				Sample ID	0908_QC315_231127	0908_QC316_231127	0908_QC318_231128	0908_QC319_231128	----
Sampling date / time					27-Nov-2023 13:27	27-Nov-2023 13:31	28-Nov-2023 13:33	28-Nov-2023 13:34	----
Compound	CAS Number	LOR	Unit	ES2341300-011	ES2341300-012	ES2341300-013	ES2341300-014	-----	
				Result	Result	Result	Result	----	
<b>EP231C: Perfluoroalkyl Sulfonamides - Continued</b>									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	----
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	----
<b>EP231P: PFAS Sums</b>									
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	----
<b>EP231S: PFAS Surrogate</b>									
13C4-PFOS	----	0.02	%	<b>99.6</b>	<b>100</b>	<b>104</b>	<b>102</b>		----
13C8-PFOA	----	0.02	%	<b>102</b>	<b>103</b>	<b>101</b>	<b>101</b>		----



### Surrogate Control Limits

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP231S: PFAS Surrogate</b>			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120



## QUALITY CONTROL REPORT

Work Order	: ES2341300	Page	: 1 of 7
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Contact	: [REDACTED]
Address	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Order number	: 60612562_2.1	Date Analysis Commenced	: 30-Nov-2023
C-O-C number	: 60808	Issue Date	: 05-Dec-2023
Sampler	: [REDACTED]		
Site	: 0908 - Biannual		
Quote number	: SY/139/19 v4 60612562_2.1		
No. of samples received	: 14		
No. of samples analysed	: 14		



Accreditation No. 825  
Accredited for compliance with  
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
[REDACTED]	LCMS Coordinator	Sydney Organics, Smithfield, NSW



## General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :  
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
 LOR = Limit of reporting  
 RPD = Relative Percentage Difference  
 # = Indicates failed QC

## Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2341300-006	0908_QC307_231122	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5460812) - continued</b>									
ES2341296-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2341300-006	0908_QC307_231122	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		<b>EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5460812)</b>							
ES2341296-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	0908_QC307_231122	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2341300-006	0908_QC307_231122	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
<b>EP231P: PFAS Sums (QC Lot: 5460812)</b>									
ES2341296-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2341300-006	0908_QC307_231122	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit





## Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	89.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.2	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)</b>								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	84.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	92.2	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	85.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	86.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	91.4	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	89.3	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>								



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812) - continued</b>								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	94.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	96.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	118	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.3	71.4	144

### Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
					MS	Low	High
<b>EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	82.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	98.5	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	97.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	71.3	53.0	142
<b>EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.4	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	96.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	103	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	85.4	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	89.4	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTTrDA)	72629-94-8	0.25 µg/L	89.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	98.5	71.0	132
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	93.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	102	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	94.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.5	66.0	145



Sub-Matrix: WATER

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5460812) - continued</b>							
ES2341296-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	84.7	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	89.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.0	61.0	135
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5460812)</b>							
ES2341296-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	92.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	112	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	93.4	71.4	144



## QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2341300	Page	: 1 of 5
Client	: AECOM AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: [REDACTED]	Telephone	: +61 2 8784 8555
Project	: NSW_0908_PFASOMP_23	Date Samples Received	: 29-Nov-2023
Site	: 0908 - Biannual	Issue Date	: 05-Dec-2023
Sampler	: [REDACTED] [REDACTED]	No. of samples received	: 14
Order number	: 60612562_2.1	No. of samples analysed	: 14

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

### Summary of Outliers

#### Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

#### Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

#### Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



## Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER** Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231A: Perfluoroalkyl Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_QC300_231120,	0908_QC301_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC303_231121,	0908_QC304_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC306_231122,	0908_QC307_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC309_231123,	0908_QC310_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC312_231124,	0908_QC313_231124	24-Nov-2023	01-Dec-2023	22-May-2024	✓	05-Dec-2023	22-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC315_231127,	0908_QC316_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC318_231128,	0908_QC319_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231B: Perfluoroalkyl Carboxylic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_QC300_231120,	0908_QC301_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC303_231121,	0908_QC304_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC306_231122,	0908_QC307_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC309_231123,	0908_QC310_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC312_231124,	0908_QC313_231124	24-Nov-2023	01-Dec-2023	22-May-2024	✓	05-Dec-2023	22-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC315_231127,	0908_QC316_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC318_231128,	0908_QC319_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓



Matrix: WATER Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP231C: Perfluoroalkyl Sulfonamides</b>								
HDPE (no PTFE) (EP231X) 0908_QC300_231120,	0908_QC301_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC303_231121,	0908_QC304_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC306_231122,	0908_QC307_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC309_231123,	0908_QC310_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC312_231124,	0908_QC313_231124	24-Nov-2023	01-Dec-2023	22-May-2024	✓	05-Dec-2023	22-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC315_231127,	0908_QC316_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC318_231128,	0908_QC319_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231D: (n:2) Fluorotelomer Sulfonic Acids</b>								
HDPE (no PTFE) (EP231X) 0908_QC300_231120,	0908_QC301_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC303_231121,	0908_QC304_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC306_231122,	0908_QC307_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC309_231123,	0908_QC310_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC312_231124,	0908_QC313_231124	24-Nov-2023	01-Dec-2023	22-May-2024	✓	05-Dec-2023	22-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC315_231127,	0908_QC316_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC318_231128,	0908_QC319_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓
<b>EP231P: PFAS Sums</b>								
HDPE (no PTFE) (EP231X) 0908_QC300_231120,	0908_QC301_231120	20-Nov-2023	01-Dec-2023	18-May-2024	✓	05-Dec-2023	18-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC303_231121,	0908_QC304_231121	21-Nov-2023	01-Dec-2023	19-May-2024	✓	05-Dec-2023	19-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC306_231122,	0908_QC307_231122	22-Nov-2023	01-Dec-2023	20-May-2024	✓	05-Dec-2023	20-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC309_231123,	0908_QC310_231123	23-Nov-2023	01-Dec-2023	21-May-2024	✓	05-Dec-2023	21-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC312_231124,	0908_QC313_231124	24-Nov-2023	01-Dec-2023	22-May-2024	✓	05-Dec-2023	22-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC315_231127,	0908_QC316_231127	27-Nov-2023	01-Dec-2023	25-May-2024	✓	05-Dec-2023	25-May-2024	✓
HDPE (no PTFE) (EP231X) 0908_QC318_231128,	0908_QC319_231128	28-Nov-2023	01-Dec-2023	26-May-2024	✓	05-Dec-2023	26-May-2024	✓



## Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Laboratory Control Samples (LCS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Method Blanks (MB)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
<b>Matrix Spikes (MS)</b>							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard



## Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.





## SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2341300**

Client : **AECOM AUSTRALIA PTY LTD**  
Contact : [REDACTED]  
Address : **LEVEL 21 420 GEORGE STREET  
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**  
Contact : [REDACTED]  
Address : **277-289 Woodpark Road Smithfield  
NSW Australia 2164**

E-mail : [REDACTED]  
Telephone : ----  
Facsimile : ----

E-mail : [REDACTED]  
Telephone : **+61 2 8784 8555**  
Facsimile : **+61-2-8784 8500**

Project : **NSW\_0908\_PFASOMP\_23**  
Order number : **60612562\_2.1**

Page : **1 of 3**  
Quote number : **ES2021AECOMAU0024 (SY/139/19 v4  
60612562\_2.1)**

C-O-C number : **60808**  
Site : **0908 - Biannual**  
Sampler : [REDACTED]

QC Level : **NEPM 2013 B3 & ALS QC Standard**

### Dates

Date Samples Received : **29-Nov-2023 15:20**  
Client Requested Due Date : **06-Dec-2023**

Issue Date : **29-Nov-2023**  
Scheduled Reporting Date : **06-Dec-2023**

### Delivery Details

Mode of Delivery : **Client Drop Off**  
No. of coolers/boxes : **5**

Security Seal : **Intact.**  
Temperature : **10.1°C, 9.0°C & 12.0°C - Ice  
present**

Receipt Detail :  
No. of samples received / analysed : **14 / 14**

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: WATER

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (28 analytes)
ES2341300-001	20-Nov-2023 18:32	0908_QC300_231120	✓
ES2341300-002	20-Nov-2023 18:50	0908_QC301_231120	✓
ES2341300-003	21-Nov-2023 18:29	0908_QC303_231121	✓
ES2341300-004	21-Nov-2023 18:32	0908_QC304_231121	✓
ES2341300-005	22-Nov-2023 17:40	0908_QC306_231122	✓
ES2341300-006	22-Nov-2023 17:44	0908_QC307_231122	✓
ES2341300-007	23-Nov-2023 17:42	0908_QC309_231123	✓
ES2341300-008	23-Nov-2023 17:49	0908_QC310_231123	✓
ES2341300-009	24-Nov-2023 11:51	0908_QC312_231124	✓
ES2341300-010	24-Nov-2023 11:51	0908_QC313_231124	✓
ES2341300-011	27-Nov-2023 13:27	0908_QC315_231127	✓
ES2341300-012	27-Nov-2023 13:31	0908_QC316_231127	✓
ES2341300-013	28-Nov-2023 13:33	0908_QC318_231128	✓
ES2341300-014	28-Nov-2023 13:34	0908_QC319_231128	✓

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



## Requested Deliverables

### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email



### DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT)

Email

derp.labreports@esdat.com.au



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

Email

Email

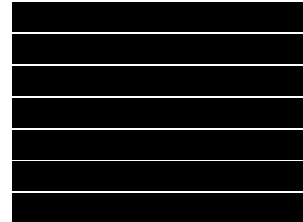
Email

Email

Email

Email

Email



- \*AU Certificate of Analysis - NATA (COA)
- \*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- \*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - EQUIS V5 AECOM (EQUIS\_V5\_AECOM)
- EDI Format - ESDAT (ESDAT)

Email

Email

Email

Email

Email

Email

Email





**CHAIN OF CUSTODY**

ALS Laboratory: ES Sydney  
Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908 - Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
PRIMARY SAMPLER: [REDACTED]

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
QUOTE NO: SY139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: [Signature]  
DATE TIME: 29/11/23 15:20

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
Biohazard info:

LABORATORY USE ONLY (Circle)  
Custody Seal Intact? Yes No N/A  
Free ice / frozen ice bricks present upon receipt? Yes No N/A  
Random Sample Temperature on Receipt: C  
Other comments:

**SAMPLE DETAILS**

**ANALYSIS REQUIRED**

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ANALYSIS REQUIRED	ADDITIONAL INFORMATION
001	0908_OC300_231120		20/11/2023 06:32 PM	WATER	ALS: 4 Non ALS: 0	No	X	
002	0908_OC301_231120		20/11/2023 06:50 PM	WATER	ALS: 4 Non ALS: 0	No	X	
003	0908_OC303_231121		21/11/2023 06:29 PM	WATER	ALS: 4 Non ALS: 0	No	X	
004	0908_OC304_231121		21/11/2023 06:32 PM	WATER	ALS: 4 Non ALS: 0	No	X	
005	0908_OC306_231122		22/11/2023 05:40 PM	WATER	ALS: 4 Non ALS: 0	No	X	
006	0908_OC307_231122		22/11/2023 05:44 PM	WATER	ALS: 4 Non ALS: 0	No	X	
007	0908_OC309_231123		23/11/2023 05:42 PM	WATER	ALS: 4 Non ALS: 0	No	X	

PFAS Waters - New Analysis WATER

ALTERNATIVE ANALYSIS

Environmental Division  
Sydney  
Work Order Reference  
**ES2341300**  
Barcode  
Telephone : +61-2-8794 8555

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908 - Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU0024

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY: [Signature]  
 DATE TIME: 29/11/23

RELINQUISHED BY:  
 DATE TIME:

RECEIVED BY:  
 DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days  
 Biohazard info:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: C  
 Other comments:

SAMPLE DETAILS					ANALYSIS REQUIRED			
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0908_QC310_231123		23/11/2023 05:49 PM	WATER	ALS: 4 Non ALS: 0	No	X	PFAS Waters - New Analysis
009	0908_QC312_231124		24/11/2023 11:51 AM	WATER	ALS: 4 Non ALS: 0	No	X	
010	0908_QC313_231124		24/11/2023 11:51 AM	WATER	ALS: 4 Non ALS: 0	No	X	
011	0908_QC315_231127		27/11/2023 01:27 PM	WATER	ALS: 4 Non ALS: 0	No	X	
012	0908_QC316_231127		27/11/2023 01:31 PM	WATER	ALS: 4 Non ALS: 0	No	X	
013	0908_QC318_231128		28/11/2023 01:33 PM	WATER	ALS: 4 Non ALS: 0	No	X	
014	0908_QC319_231128		28/11/2023 01:34 PM	WATER	ALS: 4 Non ALS: 0	No	X	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908 - Biannual

ORDER NO:

PROJECT MANAGER  
 PRIMARY SAMPLER:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME: <i>MS</i> 20/11/23	DATE TIME:	DATE TIME:

TURNAROUND REQUIREMENTS:	LABORATORY USE ONLY (Circle)
5 Days	Custody Seal intact? Yes No N/A
Biohazard info:	Free ice / frozen ice bricks present upon receipt? Yes No N/A

SAMPLER MOBILE:	Other comments:
Random Sample Temperature on Receipt: C	

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0908_QC300_231120	HDPE (no PTFE)	20 mL	00352309042802	Grey	No	
001	0908_QC300_231120	HDPE (no PTFE)	20 mL	00352309042835	Grey	No	
001	0908_QC300_231120	HDPE (no PTFE)	20 mL	00352309049748	Grey	No	
001	0908_QC300_231120	HDPE (no PTFE)	20 mL	00352309049665	Grey	No	
002	0908_QC301_231120	HDPE (no PTFE)	20 mL	00352309049626	Grey	No	
002	0908_QC301_231120	HDPE (no PTFE)	20 mL	00352309042824	Grey	No	
002	0908_QC301_231120	HDPE (no PTFE)	20 mL	00352309042844	Grey	No	
002	0908_QC301_231120	HDPE (no PTFE)	20 mL	00352309049724	Grey	No	
003	0908_QC303_231121	HDPE (no PTFE)	20 mL	00352309049690	Grey	No	
003	0908_QC303_231121	HDPE (no PTFE)	20 mL	00352309042828	Grey	No	
003	0908_QC303_231121	HDPE (no PTFE)	20 mL	00352309049713	Grey	No	
003	0908_QC303_231121	HDPE (no PTFE)	20 mL	00352309049707	Grey	No	
004	0908_QC304_231121	HDPE (no PTFE)	20 mL	00352309049720	Grey	No	
004	0908_QC304_231121	HDPE (no PTFE)	20 mL	00352309049681	Grey	No	
004	0908_QC304_231121	HDPE (no PTFE)	20 mL	00352309049602	Grey	No	
004	0908_QC304_231121	HDPE (no PTFE)	20 mL	00352309042826	Grey	No	
005	0908_QC306_231122	HDPE (no PTFE)	20 mL	00352309049731	Grey	No	
005	0908_QC306_231122	HDPE (no PTFE)	20 mL	00352309042808	Grey	No	
005	0908_QC306_231122	HDPE (no PTFE)	20 mL	00352309049604	Grey	No	
005	0908_QC306_231122	HDPE (no PTFE)	20 mL	00352309042846	Grey	No	
006	0908_QC307_231122	HDPE (no PTFE)	20 mL	00352309049615	Grey	No	
006	0908_QC307_231122	HDPE (no PTFE)	20 mL	00352309042836	Grey	No	
006	0908_QC307_231122	HDPE (no PTFE)	20 mL	00352309042779	Grey	No	
006	0908_QC307_231122	HDPE (no PTFE)	20 mL	00352309049736	Grey	No	
007	0908_QC309_231123	HDPE (no PTFE)	20 mL	00352309049749	Grey	No	
007	0908_QC309_231123	HDPE (no PTFE)	20 mL	00352309042831	Grey	No	

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFAASOMP\_23

SITE: 0908 - Biannual

ORDER NO:

PROJECT MANAGER  
 PRIMARY SAMPLER:

EMAIL REPORTS TO:

EMAIL INVOICES TO:

CONTACT PH: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002

RECEIVED BY: [Signature]  
 DATE TIME: 29/11/23 15:20

RECEIVED BY:  
 DATE TIME:

RELINQUISHED BY:  
 DATE TIME:

LABORATORY USE ONLY (Circle)  
 Custody Seal Intact?  
 Free Ice / frozen ice bricks present upon receipt?  
 Random Sample Temperature on Receipt:  
 Other comments:

Yes No N/A  
 Yes No N/A  
 C

Item ID	Material	Volume	Container ID	Color	Seal Intact?	Free Ice?	Temp on Receipt?	Other Comments
007	0908_QC309_231123	20 mL	00352309049723	Grey	No			
007	0908_QC309_231123	20 mL	00352309042804	Grey	No			
008	0908_QC310_231123	20 mL	00352309042749	Grey	No			
008	0908_QC310_231123	20 mL	00352309049735	Grey	No			
008	0908_QC310_231123	20 mL	00352309042850	Grey	No			
008	0908_QC310_231123	20 mL	00352309049725	Grey	No			
009	0908_QC312_231124	20 mL	00352309049608	Grey	No			
009	0908_QC312_231124	20 mL	00352309049651	Grey	No			
009	0908_QC312_231124	20 mL	00352309049741	Grey	No			
009	0908_QC312_231124	20 mL	00352309042762	Grey	No			
009	0908_QC312_231124	20 mL	00352309042832	Grey	No			
010	0908_QC313_231124	20 mL	00352309049726	Grey	No			
010	0908_QC313_231124	20 mL	00352309042838	Grey	No			
010	0908_QC313_231124	20 mL	00352309049620	Grey	No			
010	0908_QC313_231124	20 mL	00352101040363	Grey	No			
011	0908_QC315_231127	20 mL	00352101040294	Grey	No			
011	0908_QC315_231127	20 mL	00352101040436	Grey	No			
011	0908_QC315_231127	20 mL	00352101040579	Grey	No			
012	0908_QC316_231127	20 mL	003512210222271	Grey	No			
012	0908_QC316_231127	20 mL	003512210222247	Grey	No			
012	0908_QC316_231127	20 mL	003512210222463	Grey	No			
012	0908_QC316_231127	20 mL	003512210222269	Grey	No			
013	0908_QC318_231128	20 mL	00350822059461	Grey	No			
013	0908_QC318_231128	20 mL	003512210222219	Grey	No			
013	0908_QC318_231128	20 mL	003512210222471	Grey	No			
014	0908_QC319_231128	20 mL	00350822059505	Grey	No			

**CHAIN OF CUSTODY**

ALS COC#: 60808 ALS Laboratory: ES Sydney Environmental

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NSW\_0908\_PFA50MP\_23

SITE: 0908 - Biannual

ORDER NO:

PROJECT MANAGER: [REDACTED]  
 PRIMARY SAMPLER: [REDACTED]

EMAIL REPORTS TO:

EMAIL INVOICES TO:

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY: *MSW*  
DATE TIME: *20/11/23 15:20*

RELINQUISHED BY:  
DATE TIME:

RECEIVED BY:  
DATE TIME:

TURNAROUND REQUIREMENTS: 5 Days

Biohazard info:

CONTACT PH: [REDACTED] SAMPLER MOBILE: [REDACTED]  
 QUOTE NO: SY/139/19 v4 60612562\_2.1 / ES2021AECOMAU002 4

**LABORATORY USE ONLY (Circle)**  
 Custody Seal Intact? Yes No N/A  
 Free ice / frozen ice bricks present upon receipt? Yes No N/A  
 Random Sample Temperature on Receipt: °C  
 Other comments:

ID	Material	Volume	Barcode	Color	Temperature	Notes
014	HDPE (no PTFE)	20 mL	00352101040412	Grey		No
014	HDPE (no PTFE)	20 mL	00351221022326	Grey		No
014	HDPE (no PTFE)	20 mL	00351221022330	Grey		No

**Total Bottle Count: ALS: 56, Non ALS: 0**



## CERTIFICATE OF ANALYSIS 338971

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	██████████
<b>Address</b>	PO Box Q410, QVB Post Office, Sydney, NSW, 1230

### Sample Details

<b>Your Reference</b>	<u>NSW_0908_PFASOMP_23</u>
<b>Number of Samples</b>	12 Water, 3 Sediment
<b>Date samples received</b>	29/11/2023
<b>Date completed instructions received</b>	29/11/2023

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. Results relate specifically to the samples as received.  
 Results are reported on a dry weight basis for solids and on an as received basis for other matrices.  
**Please refer to the last page of this report for any comments relating to the results.**

### Report Details

<b>Date results requested by</b>	07/12/2023
<b>Date of Issue</b>	07/12/2023
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

**Results Approved By**



**Authorised By**



PFAS in Waters Extended						
Our Reference		338971-1	338971-2	338971-3	338971-4	338971-6
Your Reference	UNITS	0908_QC200_23 1121	0908_QC201_23 1121	0908_QC202_23 1121	0908_QC203_23 1123	0908_QC205_23 1123
Date Sampled		21/11/2023	21/11/2023	21/11/2023	23/11/2023	23/11/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/12/2023	01/12/2023	01/12/2023	01/12/2023	01/12/2023
Date analysed	-	01/12/2023	01/12/2023	01/12/2023	01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.01	0.24	0.06
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	0.08	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	0.76	0.16
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	0.03	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.02	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	0.01	<0.01	0.02	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	100	98	102	105	99
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	99	100	100	102	105
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	100	97	96	98	98
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	99	102	97	99	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	110	108	107	103	106

PFAS in Waters Extended						
Our Reference		338971-1	338971-2	338971-3	338971-4	338971-6
Your Reference	UNITS	0908_QC200_23 1121	0908_QC201_23 1121	0908_QC202_23 1121	0908_QC203_23 1123	0908_QC205_23 1123
Date Sampled		21/11/2023	21/11/2023	21/11/2023	23/11/2023	23/11/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	109	107	94	107	109
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	117	123	116	116	116
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	98	101	97	100	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	107	109	105	103	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	125	128	122	119	118
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	111	114	111	110	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	124	119	120	120	117
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	134	136	138	127	127
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	130	139	134	132	134
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	87	98	90	91	93
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	108	110	100	89	96
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	150	155	140	126	134
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	166	178	167	148	157
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	108	106	106	107	106
Extracted ISTD d <sub>3</sub> N MeFOSA	%	112	111	111	110	109
Extracted ISTD d <sub>5</sub> N EtFOSA	%	101	100	99	100	99
Extracted ISTD d <sub>7</sub> N MeFOSE	%	102	98	94	97	98
Extracted ISTD d <sub>9</sub> N EtFOSE	%	102	101	100	102	100
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	121	127	119	118	120
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	119	126	111	112	112
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.01	1.0	0.22
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	0.78	0.16
Total Positive PFAS	µg/L	0.01	<0.01	0.03	1.1	0.22

PFAS in Waters Extended						
Our Reference		338971-7	338971-8	338971-9	338971-10	338971-12
Your Reference	UNITS	0908_QC206_23 1122	0908_QC207_23 1127	0908_QC208_23 1122	0908_QC209_23 1127	0908_QC211_23 1128
Date Sampled		22/11/2023	27/11/2023	22/11/2023	27/11/2023	28/11/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/12/2023	01/12/2023	01/12/2023	01/12/2023	01/12/2023
Date analysed	-	01/12/2023	01/12/2023	01/12/2023	01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.09	<0.01	0.03
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.08	<0.01	0.05
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.05	<0.01	0.87	0.01	0.68
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	0.06	<0.01	0.08
Perfluorooctanesulfonic acid PFOS	µg/L	0.04	<0.01	0.62	<0.01	0.90
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.02	<0.02	0.03
Perfluorohexanoic acid	µg/L	0.02	<0.01	0.15	<0.01	0.1
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.03	<0.01	0.02
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.05	<0.01	0.05
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	0.02	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	103	107	107	106	104
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	103	101	103	105	100
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	97	99	97	96	99
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	99	100	97	97	98
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	102	104	103	104	103
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	103	100	106	105	104

PFAS in Waters Extended						
Our Reference		338971-7	338971-8	338971-9	338971-10	338971-12
Your Reference	UNITS	0908_QC206_23 1122	0908_QC207_23 1127	0908_QC208_23 1122	0908_QC209_23 1127	0908_QC211_23 1128
Date Sampled		22/11/2023	27/11/2023	22/11/2023	27/11/2023	28/11/2023
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	109	112	114	114	111
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	94	99	97	98	100
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	109	106	101	103	104
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	117	119	119	119	122
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	110	112	108	110	108
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	117	123	117	117	112
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	127	139	131	134	124
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	134	130	128	134	128
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	88	93	96	95	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	94	96	94	89	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	139	136	133	128	138
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	163	140	143	152	151
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	104	105	103	109	103
Extracted ISTD d <sub>3</sub> N MeFOSA	%	106	109	106	106	105
Extracted ISTD d <sub>5</sub> N EtFOSA	%	93	99	99	102	100
Extracted ISTD d <sub>7</sub> N MeFOSE	%	94	98	93	97	98
Extracted ISTD d <sub>9</sub> N EtFOSE	%	97	94	97	97	95
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	111	119	115	118	116
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	111	109	107	112	117
Total Positive PFHxS & PFOS	µg/L	0.09	<0.01	1.5	0.01	1.6
Total Positive PFOA & PFOS	µg/L	0.04	<0.01	0.67	<0.01	0.95
Total Positive PFAS	µg/L	0.11	<0.01	2.0	0.01	1.9

PFAS in Waters Extended			
Our Reference		338971-13	338971-15
Your Reference	UNITS	0908_QC212_23 1123	0908_QC214_23 1128
Date Sampled		23/11/2023	28/11/2023
Type of sample		Water	Water
Date prepared	-	01/12/2023	01/12/2023
Date analysed	-	01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	0.02	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	98	96
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	103	93
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	100	92
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	97	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	104	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	109	110

PFAS in Waters Extended			
Our Reference		338971-13	338971-15
Your Reference	UNITS	0908_QC212_23 1123	0908_QC214_23 1128
Date Sampled		23/11/2023	28/11/2023
Type of sample		Water	Water
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	114	115
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	97	99
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	107	102
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	121	124
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	112	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	114	119
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	130	132
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	129	125
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	99	91
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	104	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	144	131
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	143	139
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	106	108
Extracted ISTD d <sub>3</sub> N MeFOSA	%	110	113
Extracted ISTD d <sub>5</sub> N EtFOSA	%	101	99
Extracted ISTD d <sub>7</sub> N MeFOSE	%	96	96
Extracted ISTD d <sub>9</sub> N EtFOSE	%	93	97
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	120	120
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	112	114
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	0.02	<0.01

PFAS in Soils Extended				
Our Reference		338971-5	338971-11	338971-14
Your Reference	UNITS	0908_QC204_23 1121	0908_QC210_23 1122	0908_QC213_23 1128
Date Sampled		21/11/2023	22/11/2023	28/11/2023
Type of sample		Sediment	Sediment	Sediment
Date prepared	-	01/12/2023	01/12/2023	01/12/2023
Date analysed	-	01/12/2023	01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	1.8	0.8
Perfluoroheptanesulfonic acid	µg/kg	<0.1	0.3	0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.8	8.5	18
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	0.2	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	0.3	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.5
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<2.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<5
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<5
N-Ethyl perfluorooctanesulfonamide	µg/kg	<1	<1	<5
N-Me perfluorooctanesulfonamid ethanol	µg/kg	<1	<1	<5
N-Et perfluorooctanesulfonamid ethanol	µg/kg	<5	<5	<10
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	105	103	105
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	101	100	103
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	91	88	89
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	88	84	88
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	92	87	40



PFAS in Soils Extended				
Our Reference		338971-5	338971-11	338971-14
Your Reference	UNITS	0908_QC204_23 1121	0908_QC210_23 1122	0908_QC213_23 1128
Date Sampled		21/11/2023	22/11/2023	28/11/2023
Type of sample		Sediment	Sediment	Sediment
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%	100	94	86
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%	97	97	88
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%	90	87	91
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%	93	91	97
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	105	97	55
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%	102	92	32
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%	100	87	40
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%	119	109	31
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%	136	97	#
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%	110	111	35
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%	96	95	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	146	106	52
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	128	106	48
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%	96	89	#
Extracted ISTD d <sub>3</sub> N MeFOSA	%	97	83	26
Extracted ISTD d <sub>5</sub> N EtFOSA	%	94	79	34
Extracted ISTD d <sub>7</sub> N MeFOSE	%	88	69	26
Extracted ISTD d <sub>9</sub> N EtFOSE	%	88	75	28
Extracted ISTD d <sub>3</sub> N MeFOSAA	%	114	94	#
Extracted ISTD d <sub>5</sub> N EtFOSAA	%	110	112	41
Total Positive PFHxS & PFOS	µg/kg	0.8	10	19
Total Positive PFOS & PFOA	µg/kg	0.8	8.8	18
Total Positive PFAS	µg/kg	0.8	11	19

Moisture				
Our Reference		338971-5	338971-11	338971-14
Your Reference	UNITS	0908_QC204_23 1121	0908_QC210_23 1122	0908_QC213_23 1128
Date Sampled		21/11/2023	22/11/2023	28/11/2023
Type of sample		Sediment	Sediment	Sediment
Date prepared	-	01/12/2023	01/12/2023	01/12/2023
Date analysed	-	02/12/2023	02/12/2023	02/12/2023
Moisture	%	25	38	30



QUALITY CONTROL: PFAS in Waters Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	338971-2
Date prepared	-			01/12/2023	1	01/12/2023	01/12/2023		01/12/2023	01/12/2023
Date analysed	-			01/12/2023	1	01/12/2023	01/12/2023		01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	108	100
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	115	101
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	112	103
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	121	107
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	111	105
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	98
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	99
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	97
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	116	104
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	101
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	95
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	121	120
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	91
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	108	104
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	97	93
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	95
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	118	104
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	114	109
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	0.01	0.02	67	89	92
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	112
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	115	113
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	116	108
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	113	104
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	116	105
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	105	101
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	110	108
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	117	109
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	100
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	103	1	100	104	4	106	105
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	100	1	99	107	8	102	101

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	338971-2
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	100	1	100	99	1	98	100
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	98	1	99	99	0	97	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	105	1	110	107	3	105	105
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	112	1	109	112	3	110	106
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	116	1	117	120	3	113	118
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	102	1	98	102	4	96	99
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	113	1	107	108	1	108	108
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	123	1	125	119	5	120	123
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	107	1	111	111	0	105	107
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	118	1	124	126	2	115	121
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	130	1	134	132	2	126	122
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	121	1	130	135	4	128	127
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	75	1	87	95	9	87	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	114	1	108	103	5	101	103
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	146	1	150	145	3	148	149
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	152	1	166	167	1	171	171
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	106	1	108	107	1	105	104
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	106	1	112	110	2	108	108
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	96	1	101	102	1	98	100
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	92	1	102	97	5	95	97

QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	338971-2
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	94	1	102	102	0	98	96
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	114	1	121	123	2	116	118
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	106	1	119	118	1	117	114

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	13	01/12/2023	01/12/2023		[NT]	[NT]
Date analysed	-			[NT]	13	01/12/2023	01/12/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	13	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	13	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	13	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	13	0.02	0.02	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	13	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfonamide	µg/L	0.1	Org-029	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamidethanol	µg/L	0.05	Org-029	[NT]	13	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamidethanol	µg/L	0.5	Org-029	[NT]	13	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulfonamidacetic acid	µg/L	0.02	Org-029	[NT]	13	<0.02	<0.02	0	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	[NT]	13	98	106	8	[NT]	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	[NT]	13	103	100	3	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	[NT]	13	100	96	4	[NT]	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	[NT]	13	97	100	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	[NT]	13	104	103	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	[NT]	13	109	109	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	[NT]	13	114	112	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	[NT]	13	97	96	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	[NT]	13	107	104	3	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	[NT]	13	121	121	0	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	[NT]	13	112	108	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	[NT]	13	114	119	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	[NT]	13	130	131	1	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	[NT]	13	129	134	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	[NT]	13	99	97	2	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	[NT]	13	104	92	12	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	[NT]	13	144	139	4	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	[NT]	13	143	159	11	[NT]	[NT]
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	[NT]	13	106	108	2	[NT]	[NT]
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	[NT]	13	110	109	1	[NT]	[NT]
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	[NT]	13	101	101	0	[NT]	[NT]
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	[NT]	13	96	100	4	[NT]	[NT]



QUALITY CONTROL: PFAS in Waters Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	[NT]	13	93	97	4	[NT]	[NT]
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	[NT]	13	120	124	3	[NT]	[NT]
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	[NT]	13	112	114	2	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	338971-11
Date prepared	-			01/12/2023	5	01/12/2023	01/12/2023		01/12/2023	01/12/2023
Date analysed	-			01/12/2023	5	01/12/2023	01/12/2023		01/12/2023	01/12/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	99	93
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	107	104
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	105	100
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	115	112
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	5	0.8	0.8	0	99	78
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	97	101
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	103	96
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	99	97
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	102	100
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	100	93
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	100	95
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	107	102
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	99	95
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	107	103
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	94	98
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	5	<0.5	<0.5	0	105	123
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	5	<5	<5	0	109	101
4:2 FTS	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	96	101
6:2 FTS	µg/kg	0.1	Org-029	<0.1	5	<0.1	<0.1	0	95	101
8:2 FTS	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	110	102
10:2 FTS	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	108	121
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	100	97
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	108	101
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	Org-029	<1	5	<1	<1	0	105	98
N-Me perfluorooctanesulfonamidethanol	µg/kg	1	Org-029	<1	5	<1	<1	0	100	99
N-Et perfluorooctanesulfonamidethanol	µg/kg	5	Org-029	<5	5	<5	<5	0	99	101
MePerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	109	107
EtPerfluorooctanesulfonamidacetic acid	µg/kg	0.2	Org-029	<0.2	5	<0.2	<0.2	0	99	92
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	104	5	105	103	2	100	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	99	5	101	101	0	104	100

QUALITY CONTROL: PFAS in Soils Extended						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	338971-11
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	102	5	91	92	1	103	92
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	98	5	88	88	0	99	85
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	107	5	92	97	5	109	90
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFBA	%		Org-029	122	5	100	98	2	111	93
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFPeA	%		Org-029	123	5	97	102	5	113	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFHxA	%		Org-029	105	5	90	95	5	102	88
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFHpA	%		Org-029	107	5	93	95	2	106	92
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	121	5	105	101	4	112	98
Extracted ISTD <sup>13</sup> C <sub>5</sub> PFNA	%		Org-029	105	5	102	91	11	105	88
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDA	%		Org-029	117	5	100	100	0	115	85
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFUnDA	%		Org-029	123	5	119	110	8	118	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFDoDA	%		Org-029	132	5	136	121	12	123	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> PFTeDA	%		Org-029	123	5	110	129	16	122	110
Extracted ISTD <sup>13</sup> C <sub>2</sub> 4:2FTS	%		Org-029	107	5	96	97	1	109	97
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	124	5	146	115	24	119	101
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	132	5	128	123	4	137	111
Extracted ISTD <sup>13</sup> C <sub>8</sub> FOSA	%		Org-029	109	5	96	98	2	107	88
Extracted ISTD d <sub>3</sub> N MeFOSA	%		Org-029	111	5	97	99	2	108	83
Extracted ISTD d <sub>5</sub> N EtFOSA	%		Org-029	105	5	94	94	0	104	82
Extracted ISTD d <sub>7</sub> N MeFOSE	%		Org-029	101	5	88	84	5	101	72

QUALITY CONTROL: PFAS in Soils Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	338971-11
<i>Extracted ISTD d<sub>9</sub> N EtFOSE</i>	%		Org-029	109	5	88	89	1	108	77
<i>Extracted ISTD d<sub>3</sub> N MeFOSAA</i>	%		Org-029	116	5	114	112	2	111	89
<i>Extracted ISTD d<sub>5</sub> N EtFOSAA</i>	%		Org-029	109	5	110	104	6	117	112

**Result Definitions**

<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
<b>NEPM</b>	National Environmental Protection Measure
<b>NR</b>	Not Reported

## Quality Control Definitions

<b>Blank</b>	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
<b>Duplicate</b>	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
<b>Matrix Spike</b>	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
<b>LCS (Laboratory Control Sample)</b>	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
<b>Surrogate Spike</b>	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

## SAMPLE RECEIPT ADVICE

### Client Details

<b>Client</b>	AECOM Australia Pty Ltd (Sydney)
<b>Attention</b>	[REDACTED]

### Sample Login Details

<b>Your reference</b>	NSW_0908_PFASOMP_23
<b>Envirolab Reference</b>	338971
<b>Date Sample Received</b>	29/11/2023
<b>Date Instructions Received</b>	29/11/2023
<b>Date Results Expected to be Reported</b>	07/12/2023

### Sample Condition

<b>Samples received in appropriate condition for analysis</b>	No
<b>No. of Samples Provided</b>	12 Water, 3 Sediment
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on Receipt (°C)</b>	1.0
<b>Cooling Method</b>	Ice
<b>Sampling Date Provided</b>	YES

### Comments

Please contact the laboratory within 24 hours if you wish to cancel the aforementioned testing. Otherwise testing will proceed as per the COC and hence invoiced accordingly.

Please direct any queries to:

<b>Phone: 02 9910 6200</b>	<b>Phone: 02 9910 6200</b>
<b>Fax: 02 9910 6201</b>	<b>Fax: 02 9910 6201</b>
<b>Email: [REDACTED]</b>	<b>Email: [REDACTED]</b>

Analysis Underway, details on the following page:





Sample ID	AECOM checks	AECOM checks	AECOM checks	AECOM INORG checks	AECOM checks	PFAS in Waters Extended	PFAS in Soils Extended
0908_QC200_231121	✓	✓	✓	✓	✓	✓	
0908_QC201_231121	✓	✓	✓	✓	✓	✓	
0908_QC202_231121	✓	✓	✓	✓	✓	✓	
0908_QC203_231123	✓	✓	✓	✓	✓	✓	
0908_QC204_231121	✓	✓	✓	✓	✓		✓
0908_QC205_231123	✓	✓	✓	✓	✓	✓	
0908_QC206_231122	✓	✓	✓	✓	✓	✓	
0908_QC207_231127	✓	✓	✓	✓	✓	✓	
0908_QC208_231122	✓	✓	✓	✓	✓	✓	
0908_QC209_231127	✓	✓	✓	✓	✓	✓	
0908_QC210_231122	✓	✓	✓	✓	✓		✓
0908_QC211_231128	✓	✓	✓	✓	✓	✓	
0908_QC212_231123	✓	✓	✓	✓	✓	✓	
0908_QC213_231128	✓	✓	✓	✓	✓		✓
0908_QC214_231128	✓	✓	✓	✓	✓	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

### Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.



# CHAIN OF CUSTODY FORM

## ENVIROLAB GROUP

National phone number 1300 424 344

**Sydney Lab - Envirolab Services**  
 12 Ashley St, Chatswood, NSW 2067  
 ☎ 02 9910 6200 | ✉ sydney@envirolab.com.au

**Perth Lab - MPL Laboratories**  
 16-18 Hayden Cr, Myaree, WA 6154  
 ☎ 08 9317 2505 | ✉ lab@mpl.com.au

**Melbourne Lab - Envirolab Services**  
 25 Research Drive, Croydon South, VIC 3136  
 ☎ 03 9763 2500 | ✉ melbourne@envirolab.com.au

**Adelaide Office - Envirolab Services**  
 7a The Parade, Norwood, SA 5067  
 ☎ 08 7087 6800 | ✉ adelaide@envirolab.com.au

**Brisbane Office - Envirolab Services**  
 20a, 10-20 Depot St, Banyo, QLD 4014  
 ☎ 07 3266 9532 | ✉ brisbane@envirolab.com.au

**Darwin Office - Envirolab Services**  
 Unit 20/119 Reichardt Road, Winnellie, NT 0820  
 ☎ 08 8967 1201 | ✉ darwin@envirolab.com.au

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Company:	AECOM	Client Project Name/Number/Site etc (ie report title):	NSW 0908 PFASOMP 23
Contact Person:	[REDACTED]	PO No. (if applicable):	60612562 2.1
Project Mgr:	[REDACTED]	Envirolab Quote No.:	
Address:	Level 6, 420 George St, Sydney, NSW, 2000	Date results required:	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Same Day <input type="checkbox"/> 1 day <input type="checkbox"/> 2 day <input type="checkbox"/> 3 day
Phone:		Mob:	[REDACTED]
Email Results to:	[REDACTED]	Additional report format:	<input checked="" type="checkbox"/> Esdat <input type="checkbox"/> Equis
Email Invoice to:	[REDACTED]	Lab Comments:	

Sample information					Tests Required										Comments							
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS Extended Suite - Routine Level																Provide as much information about the sample as you can	
1	0908_QC200_231121	-	21/11/2023	Groundwater	X																	
2	0908_QC201_231121	-	21/11/2023	Groundwater	X																	
3	0908_QC202_231121	-	21/11/2023	Surface water	X																	
4	0908_QC203_231123	-	23/11/2023	Groundwater	X																	
5	0908_QC204_231121	-	21/11/2023	Sediment	X																	
6	0908_QC205_231123	-	23/11/2023	Groundwater	X																	
7	0908_QC206_231122	-	22/11/2023	Groundwater	X																	
8	0908_QC207_231127	-	27/11/2023	Groundwater	X																	
9	0908_QC208_231122	-	22/11/2023	Surface water	X																	
10	0908_QC209_231127	-	27/11/2023	Groundwater	X																	
11	0908_QC210_231122	-	22/11/2023	Sediment	X																	
12	0908_QC211_231128	-	28/11/2023	Surface water	X																	
13	0908_QC212_231123	-	23/11/2023	Groundwater	X																	
14	0908_QC213_231128	-	28/11/2023	Sediment	X																	
15	0908_QC214_231128	-	28/11/2023	Groundwater	X																	

Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis

Relinquished by (Company): AECOM	Received by (Company): ELS SYD	Lab Use Only	
Print Name: [REDACTED]	Print Name: [REDACTED]	Job number: 338971	Cooling: Ice / Ice pack / None
Date & Time: 29/11/2023 12:00	Date & Time: 29/11/23 1600	Temperature: -0.7 °C	Security seal: Intact / Broken / None
Signature: [REDACTED]	Signature: EW	TAT Req - SAME day / 1 / 2 / 3 / 4 / (STD)	

Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME